Australia-China Centre for Air Quality Science and Management

Annual Report

2016

1. Introduction

The ACC-AQSM was launched at the Chinese Research Academy of Environmental Sciences in Beijing, in December 2014.

Our aim is to provide a platform for joint research to further understanding of the multi-dimensional problem of air pollution at all scales and its impact on human health and the environment, to provide technological and innovative solutions to the problem and continued effective monitoring of pollution sources, and to provide input into national policies that enable informed, efficient and regulated management and control.

The Centre operates as a virtual centre based at three offices, the: Queensland University of Technology (QUT), Chinese Research Academy of Environmental Science (CRAES), and Hong Kong University of Science and Technology (HKUST), and manage all research activities under the Centre banner established at each of the partner institutions. The Managing Offices are established to run the day to day activities of the Centre.

2. The Centre

Board

The Board will provide strategic advice to the Executive Committee on the full range of Centre activities and ensure that the Centre has clear objectives, and makes the most effective and efficient use of resources in order to achieve these objectives. The Board consists of two Chairs (the inaugural chairs in Australia: Prof. Ian Mackinnon, QUT; and in China, Professor Jiming Hao, Tsinghua University), a Vice-Chair (Professor Joseph Lee, HKUST). It also includes representatives from some of the partner institutions and relevant stakeholders.

Executive Committee

The Executive Committee consists of three Directors (the inaugural Directors in Australia: Professor Lidia Morawska, QUT; in China, Professor Fahe Chai, CRAES; in China HK, Prof. Christopher Chao, HKUST). The Deputy-Directors (or Executive Committee Members) will represent the partner institutions. The Executive Committee is established as the primary decision making forum for the collaborative Centre and maintains close contact with the Board between Board meetings in ways the Executive Committee considers appropriate, or the Board determines. The Executive Committee keeps the Board informed of important issues.

Member Organisations – China

- Chinese Research Academy of Environmental Science (CRAES)
- East China University of Science and Technology (ECUST)
- Fudan University (FDU)
- Hong Kong City University (HK CityU)
- Hong Kong Polytechnic University (HK PolyU)
- Hong Kong University (HKU)
- Hong Kong University of Science and Technology (HKUST)
- Peking University (PKU)
- Shanghai Academy of Environmental Sciences (SAES)
- Tsinghua University (TU)

Member Organisations – Australia

- CSIRO Oceans and Atmosphere (CSIRO)
- Curtin University (CU)
- Queensland University of Technology (QUT)
- University of New South Wales (UNSW)
- University of Sydney (USyd)

New Members

- None to mention.

Key Collaborating Organisations

Australia

- Department of Science, Information Technology, and Innovation (DSITI)

China

- Clean Air Asia
- Shanghai Environmental Monitoring Centre

Global

- Clean Air Asia Centre
- World Health Organisation, Geneva

Research Themes

- Theme 1: **Source Characterization and Emissions**
- Theme 2: **Pollution Sources, Dynamics, & Atmospheric Impacts (or Processes)**
- Theme 3: **Exposure, Health Effects & Wellbeing**
- Theme 4: **Airborne Infection Spread & Control**

Executive Committee / Research Leadership Teams

- Progress in organisation within the Teams:
  - Planning
  - Internal co-ordination
  - Training
  - Research funding
  - External collaboration
  - Communication
  - Implementation

3. Communication

News

- **20 January 2016:** Two NSFC projects involving collaboration of colleagues from the ACC-AQSM's have been successful in receiving funding!
- **12 February 2016:** Congratulations to Professor Hai Guo from HK PolyU and to the members of the ACC-AQSM on their successful Collaborative Research Fund application to the Hong Kong Research Grants Council!
- **16 March 2016:** The Curtin University has officially joined the Centre as a new member, is moving fast in establishing new collaborative projects within the Centre!
- **13 May 2016:** The second Annual Meeting of the ACC-AQSM titled, *Sino-Australia International Conference on Air Quality Science and Management,* will be held in Shanghai from the 20-22 October 2016, and hosted by the FDU.
- **20 May 2016:** Congratulations to Professor Lidia Morawska from QUT and to the members of the ACC-AQSM on their successful Australian Research Council Linkage Projects Grant, titled "*Developing and utilising advanced networks for air quality sensing and analysis*".
- **20 June 2016:** Professor Tong Zhu from the PKU was hosted by QUT in January-February of this year. Read more about the visit and the exciting new collaborative project which is led to.
- **25 August 2016:** A face-to-face meeting of the Executive Committee was held at the CRAES in Beijing on the 23 June 2016, and the next one is scheduled for this coming Monday, 29 August 2016 via video conferencing.
- **31 August 2016:** A preliminary program for the second Annual Meeting of the ACC-AQSM has been prepared!
- **5 September 2016:** The HK PolyU has released a call for a visiting exchange program titled the, *Research Student Attachment Programme 2016/17 (1st Round)*, for any PhD student(s) who are interested to work/study in Hong Kong for a few months!
- **16 September 2016:** Congratulations to Professor Zoran Ristovski from QUT and to Professor Zhi Ning from the HK CityU on their successful Hong Kong Research Council grant titled, *Semi-volatile particulate matter (PM) species in roadside environment: Role in gas-particle partitioning and formation of oxidative potential!*
- **30 September 2016:** Congratulations to Dr Svetlana Stevanovic from QUT on her successful NSFC Young Scholar grant, hosted by Dr Lina Wang from the ECUST, for a two year project titled: *Investigation on the role of aging, different aerosol fractions, different sources and different conditions on the formation of SOA and Chemical ROS in urban environments.*
- **7 October 2016:** The second Annual Meeting of the ACC-AQSM is fast approaching; Call for Presentations!
- **11 October 2016:** Successful Second Annual Meeting titled the, *Sino-Australia International Conference on Air Quality Science and Management,* took place in Shanghai from the 20-22 October 2016, and was hosted by the Fudan University.
- **14 November 2016:** Newly awarded Asian Universities Cluster (AUC) Center of Excellence in Civil Engineering grant!
- **2 December 2016:** The translation of our website is now complete and live in both English and Chinese!
- **21 December 2016:** a joint PhD agreement has been signed between the East China University of Science and Technology and the Queensland University of Technology! Merry Christmas and Happy New Year!

Web

- The English and Chinese versions are live: http://www.accaqsm.org/

4. Events / Workshops

Field Campaigns

School children personal UFP exposure monitoring in Hehsan, Guangdong – April 2016
School children personal UFP exposure monitoring in Hehsan Campaign was carried out as part of a children's panel study funded by the National Natural Science Foundation of China (NSFC), led by Associate Professor Weiwei Lin from the Sun Yat-Sen University (SYSU) in Guangzhou, China. The International Laboratory for Air Quality and Health (ILAQH) at the Queensland University of Technology (QUT) provided three personal monitors (Aerosense Nanotracer) to measure time-series of UFP concentrations and size in real-time. The monitoring campaign was conducted in a primary school in Heshan County, the city of Jiangmen within the Pearl River Delta region in China between 18 and 29 April 2016. Health (cardiopulmonary testings) and personal UFP monitoring data were collected from 59 participating school children. Dr Mandana Mazaheri, a senior researcher and Postdoctoral Fellow at ILAQH, led the personal UFP monitoring design, provided training to the SYSU team and participated in the first week of the campaign in Heshan. This project is continuing in 2017.

Hong Kong Winter-Time ROS Campaign, September – October 2016
The Hong Kong Winter-Time ROS Campaign was carried out at the Hong Kong City University, led by Professor Zhi Ning from HK CityU. The project focused on the measurement of the diurnal profiles of PM2.5 and gas-phase ROS concentrations at two different sampling sites. This project was a joint project between Professor Zoran Ristovski from Queensland University of Technology and Assistant Professor Zhi Ning from the City University of Hong Kong, and was funded by a Hong Kong Research Council Grant.

The samples were performed with the latest prototype of the novel real-time PM ROS sampler developed by QUT, the Particle into Nitroxide Quencher (PINQ). Reece Brown, a PhD candidate from QUT, spent two weeks in Hong Kong setting up, calibrating, and performing preliminary samples with the PINQ. The diurnal measurements were then taken over a month long period by Dr Nirmal Kumar, a Post-Doctoral research fellow from CityU. The measurements will provide diurnal trends in PM2.5 and gas-phase ROS concentrations for each day of the week at both roadside and rooftop sampling sites.

This campaign was the wintertime partner to the summertime "Hong Kong City University Campaign" and took place from September to December of 2015. Both are part of the project "Semi-volatile particulate matter (PM) species in roadside environment: Role in gas-particle partitioning and formation of oxidative potential". This project is continuing in 2017.

Low-Cost PM Sensors in Beijing and Brisbane, June 2016 – December 2016
The Low-cost PM sensors in Beijing and Brisbane campaign was carried out by the ILAQH, QUT and the Chinese Research Academy of Environmental Sciences (CRAES). The studies included both laboratory and field investigations with two existing PM sensors and a new sensor that was not been tested before. The studies investigated the effectsx of type of aerosol, particle size, number concentration, temperature and relative humidity. A number of low-cost PM sensors were tested at CRAES and at QUT. The results are to be presented in a research paper and PhD student, Ms Xiaoting Liu, from the QUT will visit the CRAES in 2017. This project is continuing in 2017.

Air Quality Monitoring in Hong Kong, September – November 2016
This sampling campaign was led by Professor Hai Guo from The Hong Kong Polytechnic University (HK PolyU) in collaboration with the Sun Yat-Sen University, National Central University, QUT, Ji'nan University and Hong Kong University of Science & Technology. It was conducted simultaneously at two sites: a sub-urban site in Tung Chung, Hong Kong and a rural island site in Zhuhai, China. The measurements included canister sampling, real-time monitoring of weather conditions, trace gases, volatile organic compounds (VOCs), as well as other precursors of photochemical ozone production. This wasfollowed by a comprehensive analysis of the chemical database using a combination of statistical analysis of field observations, mesoscale meteorological simulations, diagnostic and prognostic box models, for example, an observation-based box model, an emission-based model, and chemical transport models. The study significantly improved our understanding of photochemical formation and transport mechanisms for subtropical coastal regions with complex coupling of meteorology and chemistry, and advanced our knowledge of the atmospheric chemistry in the marine boundary, and has wide implications for other subtropical coastal regions. The scientific findings have had direct policy implications for reducing O_3 pollution and visibility degradation in subtropical South China. This project is continuing in 2017.

A New Hypothesis to Explain the Formation of Haze Events in China involving Charged Particles in the Atmosphere, November 2015 – January 2016

This study was led by Professor Zhaolin Gu and Professor Yan Chen from the Xian Jiaotong University (XJU) in Xian, in collaboration with the CRAES in Beijing and the ILAQG. QUT. The team worked on a new hypothesis to explain the formation of haze events in China involving charged particles in the atmosphere. The ILAQH provided for this project, charged particle data from ILAQH / CRAES Neutral Cluster and Air Ion Spectrometer (NAIS) measurements conducted in Beijing, for the modelling studies that are presently on-going. There are plans to take QUT's NAIS to Xian in the middle of 2017 to collect more data. A research paper is in preparation.

Components of Ambient Air Fine Particulate Matter and Mechanism of Its Effects on Respiratory Oxidative Stress and Inflammation, 2016 – 2018

This study was led by Professor Tong Zhu from the Peking University (PKU) in collaboration with the Department of Pulmonary Medicine, Peking University First Hospital in Beijing, China and the ILAQH, QUT. The study was funded by the Ministry of Science and Technology of the People's Republic of China (2016 – 2018). The campaign was conducted in seven communities in Shichahai, Beijing between December 2016 and September 2017. The ILAQH provided two personal monitors (Aerosense Nanotracer) to measure time-series of UFP concentrations and size in real-time. Data collection campaign included measuring pulmonary function and personal UFP exposure from 30 chronic obstructive pulmonary disease (COPD) patients and 30 healthy participants, aged 45 to 70 years old. Dr Mandana Mazaheri, Senior Researcher and Postdoctoral Fellow at the ILAQH, led the personal UFP monitoring design, providing research support and training to the Chinese partners, as well as led the analysis on personal UFP exposure assessments. This project is continuing in 2017.

Shanghai Cooking Emissions Campaign, December 2016 – January 2017

The Shanghai Cooking Emissions Campaign was carried out at the Tongji University from December 2016 to January 2017, led by Professor Zoran Ristovski and Dr. Svetlana Stevanovic from the ILAQH, QUT, Associate Professor Lina Wang from East China University of Science and Technology (ECUST), Professor Jun Gao from the Tongji University, Professor Lin Wang from Fudan University, and Dr. Li Li and Dr. Hongli Wang from the Shanghai Academy of Environment Sciences (SAES). The project was funded by a National Natural Science Foundation of China (NSFC) Grant, with Dr. Svetlana Stevanovic and Associate Professor Lina Wang as the Chief Investigators. The project focused on the measurement of the physical and chemical properties of cooking aerosols, as well as their ROS profiles and cell toxicity. Chemical analysis of the gaseous compounds was performed by PTR-MS (SAES) and CIMS (Fudan University, QUT). The laboratory was built by Tongji University just before the measurements commenced, which allowed investigation of some other factors such as different dilution factors, position and heights during cooking processes. This project is continuing in 2017.

Executive Committee meetings

- The EC held a Skype Meeting on 6 April 2016.
- The EC met face to face on 23 June 2016 at CRAES in Beijing.
- The EC held a Zoom Meeting on 29 August 2016.
- The EC met face to face on 20 October 2016 at FDU in Shanghai.

(Pictured L to R: Dr Lina Wang, ECUST; Prof Lin Wang, FDU; Prof Hai Guo, HK PolyU; Prof Fahe Chai, CRAES; Prof Lidia Morawska, QUT; Dr Rohan Jayaratne, QUT; Dr Jian Gao, CRAES; and on Skype A/Prof Ben Mullins, CU)

Annual Meeting

The Annual Meeting is hosted at rotating partner sites in Australia and China to provide an opportunity for member researchers to present and discuss findings, workshop future initiatives and exchange information.

The second Annual Meeting of the ACC-AQSM titled the, *Sino-Australia International Conference on Air Quality Science and Management,* took place in Shanghai from the 20-22nd October 2016, and was hosted by the Fudan University. It was a successful meeting; a lot of interesting discussions took place!

Overall, the Annual Meeting has further refined our research collaborations, longer term opportunities for staff and student exchange, professional development collaborations, and research developments that combine the expertise of a number of Chinese and Australian Universities and Institutes.

(Group Photo, Second Annual Meeting, 20-22 October 2016, Shanghai, China)

(Group Photo, Second Annual Meeting, 20-22 October 2016, Shanghai, China)

Visits and Exchanges (Staff and Students)

- Prof Tong Zhu (PKU), hosted by QUT, January-February 2016.
- Dr Krassi Rumchev (CU), hosted by QUT, February 2016.
- Prof Zoran Ristovski (QUT), hosted by HK CityU, March 2016.
- Dr Congrong He (QUT), hosted by JNU, March 2016.
- Dr Mandana Mazaheri (QUT), hosted by Sun Yat-Sen University in collaboration with PKU, April 2016.
- Dr Dongfang Wang (SEMC), hosted by QUT, May 2016.
- M. Xiaohao Wang (SEMC), hosted by QUT, May 2016.
- Dr Dongfang Wang (SEMC), hosted by QUT, May 2016
- Prof Zoran Ristivski (QUT), hosted by ECUST and FDU, June 2016.
- Prof Zoran Ristovski (QUT), hosted by JNU, June 2016
- Prof Lidia Morawska (QUT) and Dr Rohan Jayaratne, hosted by PKU, June 2016
- Prof Lidia Morawska (QUT) and Dr Rohan Jayaratne, hosted by TU, June 2016
- Prof Lidia Morawska (QUT) and Dr Rohan Jayaratne, hosted by CRAES, June 2016
- Prof Lidia Morawska (QUT), hosted by Dr Qiyong Liu (CCDC), June 2016
- Yueyue Chen and Xuejiao Wang (PKU), hosted by QUT, August 2016
- A/Prof Jing Shing (PKU), hosted by QUT, August 2016.
- Prof Xin Yang (FDU), hosted by QUT, September 2016.
- Mr. Reece Brown (QUT), hosted by HK CityU, September 2016.
- Ms. Jing Li (Beijing Municipal Research Institute of Environmental Protection), hosted by QUT, October 2016.
- Ms. Meizhen Zhang (Beijing Municipal Research Institute of Environmental Protection), hosted by QUT, October 2016.
- Prof Lidia Morawska (QUT), hosted by ECUST, October 2016.

(Pictured L to R: Dr Congrong He, QUT; A/Prof Xiang-Yu Hou, QUT; and Prof Tong Zhu, PKU)

5. Research Projects (Ongoing)

1. Asian Universities Cluster (AUC) Center of Excellence in Civil Engineering grant titled, I**mpacts of Megacities on Regional Atmospheric Environment – A comparative study of emission, transformation and effects of urban pollution from Australia, Singapore, Shanghai, and Hong Kong.** Prof Hai Guo (HK PolyU), Prof Lidia Morawska (QUT), A/Prof Rajasekhar Balasubramanian (National University of Singapore) and Prof Yingjun Chen (Tongji University)

2. National Natural Science Foundation of China (NSFC) Young Scholar 2017-2018 grant , titled: **Investigation on the role of aging, different aerosol fractions, different sources and different conditions on the formation of SOA and Chemical ROS in urban environments.** For Dr Svetlana Stevanovic (QUT), hosted by Dr. Lina Wang (ECUST)

3. Hong Kong Research Council Grant 2016, titled: **Semi-volatile particulate matter (PM) species in roadside environment: Role in gas-particle partitioning and formation of oxidative potential.** Led by Zoran Ristovski (QUT) and Zhi Ning (HK CityU)

4. Australia Research Council Linkage Projects Grant 2016, titled: **Developing and utilising advanced networks for air quality sensing and analysis**. Led by Lidia Morawska from the Queensland University of Technology, investigators include: Kourosh Kalantar-zadeh (RMIT), Nunzio Motta (QUT), Benjamin Mullins (CU), Godwin Ayoko (QUT), Zoran Ristovski (QUT), Mandana Mazaheri (QUT), Samuel Clifford (QUT), Matthew Dunbabin (QUT), Phong Thai (QUT), Luis Gonzalez (QUT), Dian Tjondronegoro (QUT), Matthew Riley (NSW OEH), Yvonne Scorgie (NSW OEH), David Wainwright (DSITI), Gavin Fisher (VIC EPA), Kelvyn Steer (SA EPA), Elizabeth Ebert (BOM), Jiming HAO (TU)

5. Hong Kong Research Council Grant 2016, titled: **Thermal desorption aerosol gas chromatograph and time of flight aerosol mass spectrometer**. Led by Hai GUO from the Hong Kong Polytechnic University, investigators include: Lidia Morawska (QUT), Xiangdong Li (HK PolyU), Chak Chan (HKUST), Xinming Wang (CAS), Linwei Tian (HKU), Kin-Fei Ho (CUHK), Man-Nin Chan (CUHK), Zi Ning (HK City).

6. NSFC Funded Project 2016, titled: **Identification and Evaluation of Key Impact Factors on the Multiple-Time-Resolution Particle Source Apportionment and Its Comprehensive Validation over Beijing-Tianjin-Hebei Region.** Led by Dr. Jian GAO from the Chinese Research Academy of Environmental Sciences, investigators include: Jian GAO, YiSheng XU, Shuang DENG, Yingjie SHI, Kai LI, Yingze TIAN, Caiqing YAN, Miikka Ilmari Dal Maso, Lidia MORAWSKA, Zhisheng ZHANG

7. NSFC Funded Project 2016, titled: **Concentrations and Compositions of Biogenic Volatile 6. Organic Compounds in Forests of Heavy Photochemical Pollution Regions and Their Role in Secondary Pollutant Formation.**Led by Prof Boguang WANG from Jinan University (Guangzhou), investigators include: Boguang WANG, Linyan HE, Wei SONG, Hao WANG, Duohong CHEN, Lei ZHOU, Congrong HE, Peng CHENG, Yunpeng LI, Zhijuan ZHANG

8. Cooking Emissions. Lina Wang (ECUST), Hongli Wang (SAE), Jun Gao (Tongji U), Svetlana Stevanovic (QUT), Zoran Ristovski (QUT)

9. Real time Measurements of ROS. Svetlana Stevanovic (QUT), Zhi Ning (HK CityU)

10. Contribution of Primary Sources (Traffic, Biomass Burning) to SOA formation Li Hong (CRAES) – TBA

11. Assessment of Air Pollution Exposure during Construction Work: Towards the Improvement of Dust Control and Management in the Construction Industry. Bo Xia (QUT), Geoffrey Shen (HK PolyU), Martin Skitmor (QUT), Dongping FANG (TU), Robin Drogemuller (QUT), Dezhi LI (Southeast University), Lidia Morawska (QUT), Congrong He (QUT)

12. New particle formation in Beijing air – winter campaign, measurements and modelling. Jian Gao (CRAES), Rohan Jayaratne (QUT), Buddhi Pushpawela (QUT), Min Hu (PKU), Melita Keywood (CSIRO), Congrong He (QUT)

13. Yangtze River Campaign. Jianmin Chen (FUD), Rohan Jayaratne (QUT)

14. Impact of autumn agricultural burning on air quality in Beijing. Jian Gao (CRAES), Congrong He (QUT)

15. Application of the camera for atmospheric PM measurements. Lidia Morawska (QUT), Rohan Jayaratne (QUT), Jian Gao (CRAES), Lina Wang (ECUST), Md Mahmudur Rahman (QUT)

16. Sensor Intercomparison. Jian Gao (CRAES), Shuxiao Wang (TU), Lidia Morawska (QUT), Phong Thai (QUT), Mandana Mazaheri (QUT), Christhina Candido (USyd)

17. School children personal exposure to UFP. Zhu Tong (PKU), Lidia Morawska (QUT), Mandana Mazaheri (QUT), WeiWei Lin (Sun Yat-Sen University)

18. Temperature, air quality and health effects. Haidong Kan (FDU), Adrian Barnett (QUT), Lidia Morawska (QUT), Phong Thai (QUT), Yuming Guo (UQ)

19. Epidemiology. Ben Mullins (CU), Jing (Peter) Ming (CMA)

20. Environmental pollution and adverse birth outcomes. Gunther Paul (QUT), Guanghui Dong (SYSU), Lidia Morawska (QUT)

6. Special Issue, Science of the Total Environment (STOTEN)

The Special Issue titled, ***Air Quality in China: Current and Emerging Challenges*** is a virtual SI, which brings together papers on all the aspects relating to Air Quality in China.

Guest Editors for the SI:

Professor Lidia Morawska
Queensland University of Technology, Brisbane, Australia
Email: l.morawska@qut.edu.au

Professor Jianmin Chen
Fudan University, Shanghai, China
Email: jmchen@fudan.edu.cn

Professor Tao Wang
Hong Kong Polytechnic University, Hong Kong, China
Email: tao.wang@polyu.edu.hk

Professor Tong Zhu
Peking University, Beijing, China
Email: tzhu@pku.edu.cn

The Special Issue ***Air Quality in China: Current and Emerging Challenges,*** was initiated in 2015. Submissions to the Special Issue opened in the STOTEN EES in February 2016, and the original deadline for submissions was identified as the 30th June 2016. At the end of June, an extension was granted by STOTEN to the 31st July 2016, to allow a little more time for the remaining papers to be submitted. Submissions have closed and the Special Issue is being placed on the STOTEN website.

The Special Issue includes 51 manuscripts addressing a broad spectrum of topics from five general areas:

(1) ***Primary pollution sources and their impacts on air quality;***
(2) ***Dynamic processes: secondary formation and transformations;***
(3) ***Indoor air and its relationship with outdoor air;***
(4) ***Health and exposure;***
(5) ***Mitigation: New technologies, policies and strategies.***

From the Special Issue Preface: "*14 of the manuscripts are reviews, which were conducted by large multidisciplinary, multi-organization teams, and 38 manuscripts report findings from new studies. Even a quick browse through the titles of the manuscripts reveals the complexity of the problem that the experts are collectively undertaking to understand - and to fix, as an ultimate goal. The Special Issue holistically encompassing all the angles of air pollution in China, their impacts and mitigation, is a gold mine of information. We trust that our readers will find this volume not only interesting, but inspiring in further work in pursuit of good air quality in China and beyond.*"

7. Grant Applications

Successful

- Australia Research Council Linkage Projects Grant 2016, titled: ***Developing and utilising advanced networks for air quality sensing and analysis.*** Led by Lidia Morawska from the Queensland University of Technology, investigators include: Kourosh Kalantar-zadeh (RMIT), Nunzio Motta (QUT), Benjamin Mullins (CU), Godwin Ayoko (QUT), Zoran Ristovski (QUT), Mandana Mazaheri (QUT), Samuel Clifford (QUT), Matthew Dunbabin (QUT), Phong Thai (QUT), Luis Gonzalez (QUT), Dian Tjondronegoro (QUT), Matthew Riley (NSW OEH), Yvonne Scorgie (NSW OEH), David Wainwright (DSITI), Gavin Fisher (VIC EPA), Kelvyn Steer (SA EPA), Elizabeth Ebert (BOM), Jiming HAO (TU)

- National Natural Science Foundation of China (NSFC) Young Scholar 2017-2018 grant , titled: ***Investigation on the role of aging, different aerosol fractions, different sources and different conditions on the formation of SOA and Chemical ROS in urban environments.*** For Dr Svetlana Stevanovic (QUT), hosted by Dr. Lina Wang (ECUST).

- Hong Kong Research Council Grant 2016, led by Zoran Ristovski (QUT) and Zhi Ning (HK CityU), titled: ***Semi-volatile particulate matter (PM) species in roadside environment: Role in gas-particle partitioning and formation of oxidative potential.***

- Asian Universities Cluster (AUC) Center of Excellence in Civil Engineering grant titled, ***Impacts of Megacities on Regional Atmospheric Environment – A comparative study of emission, transformation and effects of urban pollution from Australia, Singapore, Shanghai, and Hong Kong.*** Prof Hai Guo (HK PolyU), Prof Lidia Morawska (QUT), A/Prof Rajasekhar Balasubramanian (National University of Singapore) and Prof Yingjun Chen (Tongji University)

Applied / Pending

- NSFC application led by Jianmin Chen (FDU), titled: ***Toxicity and health assessment exposure to atmospheric fine particles.*** Project Investigator Australia: Prof Lidia Morawska (QUT); Main Participants: Dr Dan Li (FDU); Dr Rohan Jayaratne (QUT), Dr Mandana Mazaheri (QUT)

- Australian Academy of Science - Regional Collaborations Programme led by Lidia Morawska (QUT), titled: ***Harnessing the Emerging Sensing and Data Science to Protect Cities of Tomorrow from Air Pollution.*** Main Participants: Lidia Morawska (QUT), Matthew Dunbabin (QUT), Matthew Dunbabin (QUT), Dian Tjondronegoro (QUT), Phong Thai (QUT), Congrong He (QUT), Fahe Chai (CRAES), Hai Guo (HK PolyU), Quang Tran (Vietnam National U)

- Hong Kong Research Council 2016 application in preparation led by Hai Guo (HK PolyU), titled: ***Re-examining the contribution of volatile organic compounds to photochemical formation of secondary organic aerosols under the influence of mesoscale circulation in subtropical Hong Kong***

In Preparation, to be submitted in the next round

- Resubmission of the Australian Research Council Linkage Grants led by Lidia Morawska (QUT), titled: ***Utilisation of satellite observations for advancement of Australian air quality science and management.*** Chinese Partner Investigators: PKU.

- Hong Kong Research Council 2016 application in preparation led by Hai Guo (HK PolyU), titled: ***Re-examining the contribution of volatile organic compounds to photochemical formation of secondary organic aerosols under the influence of mesoscale circulation in subtropical Hong Kong***

- MOST: International applications expected to open.