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IGACnews

facilitating atmospheric chemistry research towards a sustainable world

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Manchester 2022 Conference Summary

» INSIDE

Early Career
Scientific Steering
Committee

pg. 10

» SPOTLIGHT

Manchester 2022
Recap

pg. 5





departments

- 3 **Editor's Note**
- 4 **IGAC Updates**
New and Leaving SSC Members

igac sponsored/endorsed event summaries

- 5 **IGAC 2022 Manchester Conference Summary**
- 7 **IGAC 2022 ECS Short Course Summary**
- 9 **IGAC 2024 Kuala Lumpur**

early career

- 10 **Early Career Scientific Steering Committee**

community

- 18 **East Africa Field Campaign**
- 20 **IGAC Equipment Donation Drive**

announcements

- 22 **In Memoriam - Dr. Astrid Kiendler-Scharr**

See page 9 for article submission guidelines.

On the Cover

In-person participants of the Manchester 2022 hybrid conference.
Photo by Huihui Wu

Editor: Langley DeWitt
Design: Allison Gray



IGAC was formed in 1990 to address growing international concern over rapid changes observed in Earth's atmosphere. IGAC operates under the umbrella of Future Earth and is jointly sponsored by the international Commission on Atmospheric Chemistry and Global Pollution (ICACGP). The IGAC International Project Office is hosted by the Cooperative Institute for Research in Environmental Sciences (CIRES) at the University of Colorado and is sponsored by the US National Science Foundation (NSF), National Oceanic and Atmospheric Association (NOAA), and National Aeronautics and Space Administration (NASA). Any opinions, findings, and conclusions or recommendations expressed in this newsletter are those of the individual author(s) and do not necessarily reflect the views of the responsible funding agencies.

Bringing together atmospheric chemistry around the world

In 2022, iCACGP and IGAC hosted its first in-person conference since 2018. It was fantastic to see the community come together in Manchester and the Local Organizing Committee did a fabulous job, as did the Scientific Programming Committee. Huge thanks to Hugh Coe for chairing this conference in an uncertain time, and for Lucy Carpenter and Judith Hoelzemann for pulling together the scientific program so well. Personally, this was my first time meeting much of the in-person community, and I was so glad to see so many of you.

We sent out a post-conference feedback survey that received over 60 responses. The Early Career events were a highlight, with many praising the wonderful volunteer work of the committee and the connection to a global community these events brought about. The size of the coffee/tea mugs were perhaps too small. Overall, there was a common desire for opening space in the conference schedule for more networking opportunities, making the side meetings more accessible and not during other events, and some fatigue for virtual elements to conferences. We are taking all of this feedback into consideration for the next conference and the survey results have been shared with the Scientific Programming Committee and the Local Organizing Committee.

Virtual meeting fatigue is a real thing, and engaging virtually to the extent one would in-person is

hard. Despite this, IGAC currently plans to move forward with hybrid events in the future. While hybrid events can be difficult, and virtual elements are an additive (not subtractive) cost, we feel that hybrid events can be more equitable for our global community. Remote attendance opens up the conference to those that could not otherwise attend due to family obligations, visa difficulties, travel costs, health concerns, and other issues. We will continue to work towards making hybrid elements more engaging and inclusive, and welcome feedback on this.

IGAC is excited to have our 2024 conference hosted in Southeast Asia, an area IGAC has never held a conference. Malaysia is located in the tropics, where interesting atmospheric chemistry that affects the global atmosphere is happening. Hosting a conference in this region of the world will connect IGAC to a new and growing atmospheric chemistry community.

Choosing an IGAC conference location is always a difficult decision. Any bids we receive are very welcome and we know these bids take a long time to prepare. The IGAC International Project Office is always grateful for the community that voluntarily puts together bids to host the IGAC biennial science conferences. We are usually choosing between very strong options that would all be excellent conferences, a happy but hard choice.

When choosing a bid, the IGAC Scientific Steering Committee looks at how well the bid answers the bid criteria from IGAC (for an example of the bid criteria for 2024, see here), feasibility of the budget, and also what community the location would open up to IGAC. The bids are discussed and voted upon by the SSC as a whole. We strive to move the conference to a variety of locations to make sure different regions of the world are represented at the IGAC conferences every few years to answer IGAC's mission of being an international and global community advancing atmospheric chemistry towards a sustainable world. A growing concern in our global community lately is the ease or difficulty of obtaining a visa for a conference location (wait times for the US, for example, are up to 2 years for a visa application, and many struggled to obtain a visa for the Manchester conference). Travel costs are also a consideration. IGAC strives to be as open as possible to all atmospheric chemists, but unfortunately no location is perfect for everyone and we hope a balance can be achieved over time by varying conference locations.

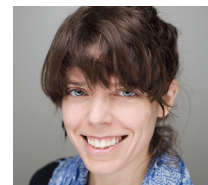
With this in mind, I welcome you all to begin to think about where IGAC should go in 2026! Below are the past conference locations. Where do you see IGAC heading next? What communities have we missed in the last few conferences?

PAST CONFERENCE LOCATIONS

2022: Manchester, UK
2021: Virtual
2018: Takamatsu, Japan
2016: Breckenridge, Colorado, USA
2014: Natal, Brazil
2012: Beijing, China
2010: Halifax, Nova Scotia, Canada
2008: Annecy, France
2006: Cape Town, South Africa
2004: Christchurch, New Zealand
2002: Crete, Greece
1999: Bologna, Italy
1998: Seattle, Washington, USA
1997: Melbourne, Australia
1995: Beijing, China
1994: Fuji-Yoshida, Japan
1993: Eilat, Israel 

IGAC DIRECTOR

Langley Dewitt serves as IGAC director to facilitate international collaboration on atmospheric chemistry to advance the field towards a sustainable world. Langley has worked as a consultant air monitoring specialist for industry in the Houston area, helped establish a climate observatory and air quality monitoring network in Rwanda, and worked on air quality and tropospheric atmospheric chemistry issues in France and the US.





Goodbye and Hello

IGAC says goodbye to long-time co-chair **Jim Crawford** and long-time Scientific Steering Committee member **Christian George**. Thank you for your leadership facilitating atmospheric chemistry towards a sustainable world!



Jim Crawford




Christian George

IGAC welcomes **Katerina Sindelarova** from the Department of Atmospheric Physics, Charles University, Prague to the IGAC SSC! We look forward to her contributions to IGAC.

Note from outgoing IGAC Co-Chair, Jim Crawford

More than any other organization, IGAC has become the place where I feel most at home both professionally and personally. My only regret is that I did not become an active member earlier in my career. It will continue to be the place where I can share my ideas, knowing that I will find others who can improve and build on them. Being a co-chair and member of the SSC was a privilege that brought me into contact with an exceptional group of colleagues.

The new IGAC Co-Chair joining Clare Murphy is **Abdus Salam**, from Dhaka, Bangladesh! 

Manchester Conference Summary



Participants at 2022 iCACGP-IGAC hybrid conference in Manchester, UK

The 2022 iCACGP-IGAC hybrid conference in Manchester, UK and online everywhere was held from 10-15 September 2022! After four years, the IGAC community was able to come together partially in-person again after a successful online conference in 2021. Almost 300 people attended in-person and over 100 online, with representation from 38 countries. Close to half of the participants were early career researchers.

The conference began with an evening mixer at a local art gallery, then quickly moved into science. Lucy Carpenter and Judith Hoelzemann co-chaired the scientific programming committee. The scientific program was divided into five sessions:

- (1) Fundamentals of Atmospheric Chemistry,
- (2) Integrated Observations, Modelling, and Analysis,
- (3) Air Quality and Impacts,
- (4) Atmospheric Chemistry at the Interfaces, and
- (5) Future Perspectives and Policy.

Huge thanks to the Local Organizing Committee and the Scientific Programming Committee, along with Penny Ralph, Helena Gittens, and Rachel Ware of the University of Manchester.



Hugh Coe

LOCAL ORGANIZING COMMITTEE

Hugh Coe (Chair),
University of Manchester,
UK

Stephen Arnold, University
of Leeds, UK

Lucy Carpenter, University
of York, UK

Oliver Wild, University of
Lancaster, UK

Ruth Doeherty, The
University of Edinburgh,
UK

SCIENTIFIC PROGRAM COMMITTEE

Lucy Carpenter, University
of York, UK (Co-Chair)

Judith Hoelzemann,
Federal University of Rio
Grande do Norte, Brazil
(Co-Chair)

Markus Ammann,
Paul Scherrer Institute,
Switzerland

Parisa Ariya, McGill
University, Canada

Laura Gallardo, University
of Chile, Chile

Christian George, CNRS,
France

Meehye Lee, Korea
University, Korea

Clare Murphy, University
of Wollongong, Australia

Nestor Rojas, National
University of Colombia,
Colombia

Abdus Salam, University of
Dhaka, Bangladesh

Robyn Schofield,
University of Melbourne,
Australia

Mei Zheng, Peking
University, China

EARLY CAREER RESEARCHERS AT THE ICACGP-IGAC 2022 CONFERENCE.

During the main conference, a number of early career events were organized by the early career local organizing committee. These included networking events, such as a lunch with established scientists and an early career researcher mixer, learning workshops on a variety of topics, such as designing and delivering a poster, stakeholder engagement, building a network post-COVID, and how to write, and wellness events such as running, yoga, and coping with imposter syndrome. Huge thanks go out to the Early Career Local Organizing Committee for setting up these events.



Early Career Researchers at the iCACGP-IGAC 2022 Conference

EARLY CAREER LOCAL ORGANIZING COMMITTEE

Emily Matthews,
University of Manchester
(Chair)

Emma Sands, University of
Edinburgh

Hannah Bryant, University
of Edinburgh

Navaneeth Thamban,
University of Manchester

Huihui Wu, University of
Manchester

Ashish Kumar, University
of York

Isla Young, University of
Lancaster

Connor Clayton,
University of Leeds

Fred Otu-Larbi, Lancaster
University

CONFERENCE SPONSORS

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Union (EGU)

Elementa

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of Meteorology and

Atmospheric Science
(IAMAS)

UK National Centre
for Atmospheric Science
(NCAS)

US National Oceanic
and Atmospheric
Administration (NOAA)

US National Aeronautics
and Space Administration
(NASA)

US National Scientific
Foundation (NSF)

Copernicus Publications
Conference Exhibitors

ACOEM <https://www.acoem.co.uk/>

Atmosphere <https://www.mdpi.com/journal/atmosphere>

Dekati <https://www.dekati.com>

Gigahertz-Optik www.gigahertz-optik.de

Picarro <https://www.picarro.com>

Royal Society of
Chemistry <https://www.rsc.org> 

Manchester Early Career Short Course Summary



Many discussions in the ECR short course before the main conference

In the lead up to-, and as part of the iCACGP-IGAC 2022 Conference (10-15 September 2022) in Manchester, an early career short course was organized from 8-10 September. The short course was attended by 29 participants from 14 nations. These participants were joined by a 7-member Early Career Short Course Committee (ECSC-C) who were responsible for organizing and facilitating the course. The 3-day short course was divided into five diverse sessions covering topics from stakeholder engagement to machine learning, and tours of research laboratories and observatories.

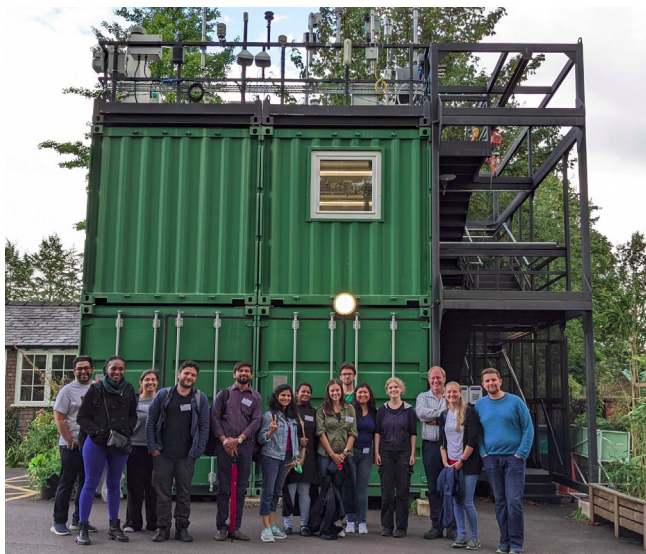
DAY ONE: SEPTEMBER 8, 2022

The ECSC-C welcomed participants at the Whitley Locke Hotel, where the short course was held, and after a delicious breakfast, registered and settled into the Storehouse hall. The morning session involved a quick-paced, 2-minute verbal presentation by each participant on their research, which

served as a good icebreaker. Two invited panelists were in attendance and provided written and oral feedback to participants on their presentations.

The icebreaker event was followed by presentations from two invited guests focusing on Challenges and Recent Developments in Atmospheric Chemistry. Mary Barth (National Center for Atmospheric Research) and Jim Crawford (NASA Langley Research Center) gave separate talks on science questions they have addressed as well as challenges they have overcome along their scientific careers. The talks ended with a motivational call on the participants to take on the emerging challenges in atmospheric chemistry identified by the two speakers.

Participants were taken on a tour of laboratories at the University of Manchester in the afternoon. This was an opportunity for participants to get a first-hand look at the operation of the labs and equipment, and interact with the scientists involved in operating and maintaining them,



Participants at the Manchester Air Quality Supersite (MAQS)

and analyzing those data. Participants visited the Aerosol and Cloud Chamber as well as Manchester Air Quality Supersite (MAQS), pictured left. At the aerosol chamber, participants were introduced to experiments on woodburning and its impacts on cloud condensation nuclei (CCN) and ice nucleating particle (INP) formation. The Manchester Cloud Chamber is 10 m tall and spans three stories of the building. Here, participants learnt about different experiments on cloud formation. MAQS is one of only three in the UK dedicated to air quality research. The MAQS is packed with state of the art technology that allows scientists to probe the atmosphere in greater detail than at standard network sites.

In the evening, short course participants and the ECSC-C had an opportunity to interact with members of the IGAC Scientific Steering Committee, the governing body of IGAC, over dinner in the Storehouse.

DAY TWO: SEPTEMBER 9, 2022

The morning session in the Storehouse was dedicated to the nuanced field of Science Communication (pictured below). The session aimed to present students with the basics of making research more usable, better communicating their science, and some examples on identifying and interacting meaningfully with stakeholders. Alastair Lewis (University of York) took participants through the various stages of scientific communication, and shared practical strategies on how scientists could influence policy and decision making through their work. The session also opened the floor to students to explore and discuss how their field of work fits into the bigger picture of interdisciplinary research.



Participants at the Science Communication morning session in the Storehouse

The afternoon session, delivered by David Topping (University of Manchester) introduced participants to the basic principles of Machine Learning and provided a breakdown of the strengths and limitations of this tool. David showed how machine learning techniques could be used to simplify complex codes and computational problems. Hands-on practical and online resources were provided to participants to ensure a good grasp of the concepts introduced in the lecture.

DAY THREE: SEPTEMBER 10, 2022

Ruth Doherty (University of Edinburgh) delivered the final session of the early career short course on Collaboration and Networking. Ruth discussed the importance of these concepts and provided practical guidance on how to build and sustain collaborations and networks with a diverse group of individuals, to improve workplace relations overall and going into the future.

GENERAL COMMENTS

Visa delays for participants was a major source of uncertainty for the ECSC-C since the number of attendees was difficult to determine and was only confirmed once the short course started. The spaces for those participants were subsequently replaced by some UK based attendees of the conference who were happy to attend, albeit on short notice. Overall feedback from participants at the end of the course showed that it was a big success and achieved its aim of creating an enabling atmosphere for early career scientists to learn, network, collaborate and have fun.



Malaysia iCACGP-IGAC Conference

The next iCACGP-IGAC Conference will be held in Kuala Lumpur, Malaysia in September 2024! Please follow updates at this website: <https://icacgp-igac2024.com/>

This is the first time that IGAC will be hosted in Malaysia and we are looking forward to reaching new atmospheric chemists and scientists in South East Asia and connecting this community with the broader IGAC community. Additionally, Malaysia has easier entry visa requirements for many countries and we hope this opens the IGAC conference to participants who may have not been able to attend the Manchester, UK conference.

If you are a scientist from Israel who wants to attend the 2024 conference, we will petition for a special exemption for you to enter Malaysia for the conference. Please write to info@igacproject.org with your information so we can include you in the request. 

If you have recently published an IGAC-relevant article and wish for it to be highlighted in IGACnews, please submit the citation to info@igacproject.org

Submit articles to the next IGACnews

IGACnews is always happy to receive relevant journal article summaries, event summaries, perspectives, and other articles from the community. Please email info@igacproject.org with ideas or for more info.



IGAC ON SOCIAL MEDIA

IGAC is on LinkedIn, Twitter and Facebook in an effort to further advance international scientific cooperation and serve as a resource to the public, especially you. Please join us to stay apprised of the most current news on conferences, workshops and publications. Let us hear from you on how to improve the international conversation, [@IGACProject](https://twitter.com/IGACProject).



Inaugural Early Career Scientific Steering Committee

iCACGP and IGAC are excited to introduce you to our first-ever Early Career Scientific Steering Committee (EC-SSC)! This inaugural group of early career researchers will be exploring ways to connect the early career community and serve as a direct connection between the wider IGAC early career community and the iCACGP and IGAC steering committees. We hope this initiative will help IGAC address the changing needs of emerging atmospheric chemists better in the future and we look forward to seeing what this committee plans!



CO-CHAIR

EMILY MATTHEWS is a postdoctoral researcher at the University of Manchester and her research primarily focuses on the analysis of chemical ionisation mass spectrometer (CIMS) measurements made onboard the UK research aircraft. Her research interests lie in the marine sulphur and reduced nitrogen cycles.



CO-CHAIR

MAXIMILIEN DESSERTAZ is a postdoctoral research fellow in atmospheric science at the Cyprus Institute since January 2022, after having worked as a technical research expert since joining the institute in October 2019. He received his PhD in atmospheric chemistry from the University of Wollongong, Australia, his BSc and MChem in chemistry from the University of Leeds, UK, and his DUT in chemistry from the University of Rouen, France. His PhD thesis focused on improving emission estimates of Australian forest and savanna fires. His current research focuses on volatile organic compounds (VOCs) emissions and

chemistry in the urban environment using state-of-the-art PTR-ToF-MS technology. He is also involved in a number of research projects in partnership with Cyl's Unmanned Systems Research Laboratory.

Max has now attended four in-person and one virtual IGAC(-iCACGP) conferences. He was a member of the early career program organising committee for the 2018 iCACGP-IGAC conference.



TANZINA AKTHER
PhD, Atmospheric Sciences
University of Houston
Houston, TX, USA

Tanzina Akther is a 3rd year

PhD student in the Atmospheric Science Research group in the Department of Earth and Atmospheric Sciences (EAS), University of Houston (UH), Houston, TX, USA. Before joining UH she obtained an MS degree in Inorganic and Analytical Chemistry at the University of Dhaka, Bangladesh. Tanzina's work focuses on a detailed interpretation of a severe ozone episode in Mexico-City in March 2016 using a comprehensive data set which comprises speciated temporally highly resolved C₂-C₈ VOC, Black Carbon (BC), Particulate matters (PM), selected ion and metals and routine air quality (NO, NO₂, NO_x, CO, SO₂) data along with continuous measurements of boundary layer height data. This data is used for (i) PMF source apportionment to determine the prevalent pollutant sources, (ii) for evaluation of the oxidation capacity of the VOC pool in conjunction with boundary layer processes during that episode and (iii) Model O₃ using AtChem₂ box model.



SIMONE THIRSTRUP ANDERSEN
Max Planck Institute for Chemistry (MPIC), Mainz, Germany
Simone.andersen@mpic.de

Simone Andersen is a postdoctoral researcher at the Max Planck Institute for Chemistry (MPIC), where she studies the chemistry of organic nitrates using a combination of field measurements from ground and aircraft campaigns in France, Brazil, and Finland, and laboratory experiments in a simulation chamber.

Simone has a Bachelor of Science (2013-2016) in Chemistry and a Masters of Sciences (2016-2018) in Green and Sustainable Chemistry from the University of Copenhagen with a year at the University of California, Irvine. She did her PhD in Atmospheric Chemistry at the University of York (2018-2022), where she studied the chemistry of nitrogen oxides (NO_x) in the remote marine boundary layer.



HANNAH BRYANT
is a second year PhD researcher at the University of Edinburgh. She works to model the environmental effects of atmospheric hydrogen emissions. This work is part of a modelling inter-comparison project with CICERO, Center for International Climate Research, funded by the Research Council of Norway. Previously, she obtained an integrated master's degree in Natural Science from the University of Cambridge.



DR. TESS CARTER

is a postdoctoral fellow at George Washington University, working on several projects, including characterizing the environmental justice impacts of PM_{2.5} and exploring the health ramifications of climate policies. She earned her PhD in atmospheric chemistry from MIT, where she worked on fires and how their smoke impacts air quality and climate, and a BS in chemistry from Brown University. Prior to graduate school, she worked on the National Climate Assessment for several years.



SEBASTIAN DIEZ

is currently a Research Associate at Wolfson Atmospheric Chemistry Laboratories (Uni of York, UK). His scientific interests focus on tools to support air quality decision-making processes and environmental justice issues and questions, especially in the Global South. During his PhD training, he has developed experience in field measurements/campaigns, modelling, and more recently in low-cost sensors. After his doctoral studies, he has been involved with regional NGOs and local governments in LatAm working on climate change and air quality projects. He is currently part of the LAECESS (Latin America Early Career Earth System Scientist Network) steering committee and the editor at Nibö (a digital media whose objective is to socialize scientific knowledge in LatAm).



SONLA HÈZOUWÈ

is a PhD student in the chemistry department at the University of Lomé in Togo. He works on air quality with low cost sensors in the city of Lomé.



LEONARD KIRAGO

is currently a PhD candidate at the department of environmental science at Stockholm University, Sweden. A central focus of his research has been investigating and quantifying the sources of different atmospheric and air pollutants - aerosols and greenhouse gases - in urban and remote environments in sub-Saharan Africa. Leonard holds a BSc. in Chemistry and an MSc in Nuclear Science applications from the University of Nairobi, Kenya.



RACHANA KULKARNI

is a highly respected independent air quality researcher with a strong focus on understanding the microphysical and chemical properties that influence air quality. She has made significant contributions to the field through her work on the Winter Fog Experiment (WiFEX) project at the IGI Airport in India, one of the busiest and most populated airports in the country. As part of the IGAC project, Rachana ensures that the team is meeting its goals and making meaningful contributions to the scientific community. Her research has been crucial in informing policies and practices related to air quality and public health.



MR. TOM RANDA

is a passionate young professional researcher with over three years of active research and practice in air pollution in cities, climate change and sustainable development in the Sub Saharan Africa. His professional scope entails research evidence generation, active stakeholder engagements to influence policy decisions and interventions design for sustainability. Passionate to transform Africa and the world through Professional research and practice excellence, Mr. Randa is keen to develop further his thought leadership skills around atmospheric science and its applications. Mr. Randa currently works as a Research Fellow under the Climate-resilient Economies program at the African Centre for technology studies, where he designs and implement different air quality, energy and climate change projects. Notably, Mr. Randa has

previously conducted studies around clean cooking and air pollution in Kenya through the Modern Energy Cooking services Program and the A system Approach to Air pollution in East Africa. Mr Randa is also the current technical Lead in a Political economy Analysis study for the Nairobi city air quality management for the Clean Air catalyst Program under the World Resource Institute Africa where he explores Air quality management, challenges and opportunities and thus needs and gaps for impactful strategic intervention design in the Energy, Waste management, Industries and Transport sectors in the city of Nairobi. Randa is a member of the Africa Sustainability Hub and a founding secretariat member of the African Research and Impact Network. He has served as a steering Member for most of the climate and disaster risk management projects he has co-delivered as a research fellow and has been serving as a governance working group member for the Adaptation Research Alliance. He is also a current research working group member for the Clean Air Catalyst Program in Nairobi, where he helps shape strategic research elements of the

program for impactful interventions design and implementation. Randa has a strong theoretical and technical background in atmospheric science through his bachelors of science in Meteorology and Masters of Science in climate change from the University of Nairobi. He has practical analytical research, and excellent leadership skills in the design, implementation, and accomplishment of various scientific research tasks. He has contributed to various peer-reviewed publications including working papers, journal articles, book chapters, and policy briefs. Mr. Randa has been further trained on spatial data analysis techniques, scientific modeling techniques, Research Methods, Data analysis techniques, scientific communication, and publications.



**MARTIN OTTO
PAUL RAMACHER**
Helmholtz-Zentrum
hereon
Chemistry Transport
Modelling Department
Geesthacht, Germany
martin.ramacher@hereon.de

Martin Otto Paul Ramacher is an early career scientist, working as junior group leader and postdoc in the chemistry transport modeling department of the environmental chemistry institute at the Helmholtz-Zentrum hereon in Geesthacht, Germany. Martin's research interests revolve around the leading topic of population exposure assessments to pollutants in multiple compartments - from local to global scales. By combining emission modeling, chemistry transport modeling and dynamic population exposure modeling for criteria pollutants in the atmosphere, he addresses real world problems and aims at supporting public health issues and policy

development. Besides this main research interest, the topic of emerging persistent contaminants traveling through different compartments found its way into his research activities, stemming from his expertise in numerical modeling of pollutants.

These research interests and the aim to address real world problems with scientific research stem from his highly interdisciplinary education background. Martin received his Bachelor of Science degree in Environmental Engineering from the University of Applied Sciences Hamburg (HAW) in 2013. In 2016, he received his Master of Science in Sustainability Sciences from the Leuphana University (Lüneburg), which finally led him to a PhD from the department of Earth System Sciences at the University of Hamburg in 2021.

Further information on his work can be found here:

<https://www.researchgate.net/profile/Martin-Ramacher>



**STEPHANIE
SCHNEIDER**

is an NSERC postdoctoral fellow in the Department of Chemistry and Chemical Biology at McMaster University in Hamilton, Ontario, Canada. She received her PhD in Environmental Chemistry from the University of Toronto under the supervision of Prof. Jon Abbatt. Her PhD thesis focused on chemical reactions occurring between the ocean and the atmosphere. Currently, her postdoctoral research focuses on the effect of wildfires on urban surfaces. Dr. Schneider is involved in the new IGAC working group, BBURNED (Biomass Burning Uncertainty, Reactions, Emissions and Dynamics) as the chemistry working group leader.



IMRAN SHAHID is currently working as Research Associate Professor at Environmental Science centre, Qatar University, Qatar. Studying atmospheric aerosols chemical and optical properties / urban air quality and dust storms. Before joining Qatar University, Dr. Shahid worked as Assistant Professor at Institute of Space Technology (IST), Islamabad Pakistan. He received his Ph. D in Atmospheric Environment from Vienna University of Technology (TUWIEN), Vienna Austria with focus on “carbonaceous species in atmospheric

aerosols and wood smoke particles”. He was Young Scientist Summer Fellow at International Institute for Applied System Analysis (IIASA), Vienna Austria.

At Qatar University he is leading air quality research group and has excellent facilities e.g aerosol LIDAR, Sun-photometer, gaseous analyzers, aethalometers and particles analyzers to study atmospheric aerosol optical / chemical properties / air quality and climate change interaction, Dust storms in Middle East and its impact on urban air quality.



DR. MUHAMMAD ZEESHAAN SHAHID
University of the Punjab, Lahore Pakistan

Dr. Muhammad Zeeshaan Shahid is an air quality modeling Scientist. He received his PhD in atmospheric environment from the Institute of Atmospheric Physics, University of Chinese Academy of Sciences, Beijing China. His PhD thesis focused on Seasonal Variations of Aerosols in Pakistan: Contributions of Domestic Anthropogenic Emissions and Transboundary Transport.

He worked as an Assistant Professor at College of Earth and Environmental Sciences, University of the Punjab, Lahore Pakistan. Prior to joining the University of the Punjab, He finished postdoc at the King Abdullah University of Science and Technology (KAUST), Saudi Arabia from June 2015 to December 2017, and second postdoc from Qatar Environment and Energy Research Institute, Qatar in 2018. His research focuses on regional air quality modelling, satellite remote sensing, data assimilation and climate change research.



KABINDRA SHAKYA is an Associate Professor and Environmental Science Program Director at the Department of Geography and the Environment at Villanova University, Pennsylvania. He received his PhD from the Department of Civil and Environmental

Engineering at Rice University, Texas in 2011 focusing on the formation and chemical characterization of particulate matter. He completed his postdoctoral research at the Department of Environmental Health Science, University of Massachusetts, Amherst from 2012 to 2016. His research focusses on understanding air quality, and chemical characterization and sources of particulate matter. His research interests also include environmental health and environmental justice issues. He has published several papers including six peer-reviewed publications focusing on air quality and health effects in Kathmandu, Nepal. He has received grants from the National Science Foundation, National Institutes of Health, United States Environmental Protection Agency, and Pennsylvania Department of Environmental Protection.



STEVEN TURNOCK currently works as a senior scientist studying air quality and climate interactions within the atmospheric composition and climate team, within the Met Office Hadley Centre based in the UK. Prior to completing his PhD at the University of Leeds in the field of aerosol and

climate science and starting work at the Met Office he gained experience outside academic research private environmental consultancy. In his current role he uses Earth system models with detailed representations of chemistry and aerosol processed to improve the knowledge and understanding of the interaction of air pollutants and climate. In particular, he uses the output from model simulations to investigate how past and future changes in climate and anthropogenic emissions have changed short lived climate forcers such as aerosols and tropospheric ozone and their impact on surface air quality and climate. He is involved in the development and improvement of chemistry and aerosol processes representation within the UK's Earth system model, UKESM, and also has previously developed a simple tropospheric ozone response model for use in rapid impact assessments of policy measures.



BERT VERREYKEN

obtained his PhD in atmospheric physics and analytical chemistry in 2021. He is currently affiliated with the Royal Belgian Institute of Space Aeronomy (Brussels, BE) and the University of Liege – Gembloux

Agro-Biotech (Gembloux, BE) where he aims to combine in situ measurements and modelling to study bi-directional exchange and of reactive trace gasses between ecosystems and the atmosphere. Before arriving in Belgium, Bert was an NRC fellow at Chemical Sciences Laboratory of the National Oceanic and Atmospheric Administration (Boulder, CO, USA). During his time in the USA, he focused on quantifying emerging anthropogenic emissions of volatile chemical products (e.g., personal care products, paints, and adhesives) using a mesoscale chemistry and an atmospheric transport model. His expertise lies primarily in the use of the proton-transfer-reaction mass-spectrometry technique to measure reactive trace gasses, as well as the development and application of atmospheric transport models to analyze in-situ measurements.



KARN VOHRA


is a postdoctoral research fellow at University College London (UCL) focusing on the health effects of exposure to air pollution from the oil and gas lifecycle in the US. Karn obtained his PhD in Environmental Health and Risk Management

from the University of Birmingham in 2021, funded by the University's Global Challenges Studentship. Motivated by the current air pollution scenario in India, he made extensive use of multiple data sources and tools (ground-based and satellite observations of atmospheric composition, emission inventories, a chemical transport model and health risk assessment models) to determine long-term changes in air quality and the impacts on human health at multiple scales, from cities, to regions, to the globe. Karn completed his Bachelors and Masters in Civil Engineering from the Indian Institute of Technology Kanpur, India in 2015. Prior to moving to the UK, he worked with McKinsey and Company as a data analyst for 2 years.



WORRADORN PHAIRUANG

from Thailand is a faculty member of Atmospheric Environment and Pollution Control Engineering, Faculty of Geosciences and Civil Engineering, Kanazawa University, Japan. His

main research focuses on the chemical and physical characteristics of airborne nanoparticles (PM). His interests cover all the natural and anthropogenic sources, particularly biomass burning, including forest fire and agricultural residue burning. He is very interested in emission inventory from biomass burning in Thailand and Asian countries. 

Working towards an international field campaign on atmospheric chemistry in East Africa

By **Jamie Crockett**

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Unless something is done soon, more people will die of impacts from air pollution that are now linked to more than a dozen non-communicable diseases.

EAST GREENSBORO, N.C. (Jan. 20, 2023) – Solomon Bililign, Ph.D., a professor in the College of Science and Technology at North Carolina Agricultural and Technical State University, chaired a follow up international workshop on air quality in Africa from Jan. 17-19. More than 80 attendees participated either virtually or in-person during the three-day workshop held at the Carnegie Mellon University Africa campus in Kigali, Rwanda.

“People are suffering and there are more than 1 million premature deaths in Africa because of the poor air quality as cities grow,” said Bililign. “The challenge is some of these countries with emerging industries, for example, have to choose between letting their people die either of hunger or air pollution. If they allow more polluters with fewer regulations, that could help economic growth by providing jobs and helping address hunger; however, it will be at the expense of public health.”

In June 2021, Bililign organized the “Pilot Design for Air Quality in Africa” virtual workshop for 80 attendees to “discuss and compile a set of ideas that would lead to air quality science that is unique to an African megacity or unique to the continent.”

The African region is the least studied in the world.

Bililign noted that at the end of this century, 13 of the world’s 20 largest



Solomon Bililign, Ph.D.,
North Carolina Agricultural and Technical State University

urban areas will be in Africa, with populations of up to 88 million in Lagos, and more than 25 million in Nairobi and Addis Ababa. Unless something is done soon, more people will die of impacts from air pollution that are now linked to more than a dozen non-communicable diseases.

“The idea to host the workshop in 2021 stemmed from me challenging this belief that it’s logistically difficult to do anything in Africa, so we shouldn’t,” said Bililign. “There are certainly problems, there are poor countries in Africa, but poor doesn’t mean impossible and air quality issues should be addressed.”

“We all breathe the same air, but people who live near the pollution source are most impacted and they are often minorities and economically disadvantaged,” said Bililign.

Workshop attendees focused on identifying and addressing the challenges and needs of their respective countries, as well as the type of collaborations that can be sustained to promote air quality research and comprehensive measurements in Africa. These observations are used to provide policymakers with recommendations to implement that will hopefully produce good health outcomes.

“We all breathe the same air, but people who live near the pollution source are most impacted and they are often minorities and economically disadvantaged,” said Bililign. “It’s not just an African issue, it’s an American issue and associated with environmental justice. North Carolina A&T is in a good position to help solve issues that are relevant to the people we serve locally and globally.”

Bililign remains determined to bring together experts and agencies with similar interests to collaborate on these efforts.

The 2023 workshop highlighted nearly 50 abstracts and associated poster presentations. Presentation topics ranged from PM_{2.5} monitoring and improving urban pollution characterization to satellite-based assessment of air pollutants and design for Internet of Things lab for monitoring to emissions from mining-related activities.


Breakout groups discussed a series of questions and agreed on the need for comprehensive ground, aircraft and satellite-based field campaigns in East African megacities in the next five to seven years, in addition to starting to build capacity and infrastructure in selected cities with local government collaborations.

Participants emphasized the need to

educate the public in the region on the dangers of air pollution to health and economic growth and local representatives pledged to work on these efforts diligently in their respective cities.

All participants will work together to develop proposals for funding from European and U.S. funding agencies, local governments and major philanthropic organizations. In the short-term, they will develop white papers addressing the outcomes of the workshop.

Sponsor support assisted with personnel and travel and lodging assistance for early career scientists from the U.S., Europe and various African countries. Participants came from the U.S., England, Belgium, the Netherlands, France, Finland, Sweden, South Africa, Ethiopia, Kenya, Uganda, Senegal, Nigeria and Ivory Coast.

To read more information about the workshop or participants’ submitted abstracts, visit the Cooperative Programs for the Advancement of Earth System Science website. 

IGAC to use network to try and match donors and recipients of air monitoring equipment

SURVEY HERE <https://www.surveymonkey.com/r/JS9SNSG>



A regulatory air monitoring station

Air quality is a major public health issue. Poor air quality kills more people than HIV and malaria combined, according to recent WHO reports. Monitoring the air is essential to understand levels and sources of pollution, to develop data-backed emissions mitigation policies, and to measure the effects of these policies. Additionally, building a scientific community around air quality measurements and analysis helps further understanding of emissions and impacts in specific regions.

Large parts of the world do not have regular monitoring of basic air pollutants (OpenAQ.org, AQICN.org). This has both local and global implications. Not only does a lack of measurements hamper the ability of local scientists to understand pollution in a region and policy makers to mitigate pollution, it also hampers the accuracy of global air quality models.

Getting scientific equipment into the hands of scientists in understudied regions of the world is an essential step towards generating needed data and reducing data inequality, increasing atmospheric chemistry publications, increasing understanding of air quality issues, and addressing data scarcity. In regions of the world that lack funding for basic air quality science, alternative methods of equipment procurement should be explored. One possibility is connecting scientists with equipment to donate—functional equipment that is not being utilized and makes measurements relevant to atmospheric chemistry—with scientists who have the capability of using that equipment.

IGAC seeks to use our large network of global scientists to connect people who have equipment to donate with people who could use the donated equipment. We are also exploring connecting mentors to scientists that might need mentorship on certain measurements and analyses. We have prepared a community survey to begin to collect information on available equipment and interested scientist recipients. Shipping costs, customs clearance costs and paperwork, maintenance costs, and supply of consumables are all additional costs that should be carefully considered by donor and recipient. Some equipment may need mentorship on running, maintaining, and analyzing the data, and donors or other interested parties should consider whether they are willing to provide medium to long-term mentorship. AfriqAQ (see sidebar) has successfully done this work in Africa and IGAC is happy to support their continued efforts as we can with our community.

We are happy to work with other networks as well to amplify their ongoing work and have discussed potential partnerships with LAECESS (who have helped us with our donation survey form). LAECESS is an open platform for Earth system scientists seeking to connect and build knowledge through their interactions. Motivated by the many problems facing the LatAm region, LAECESS was born from

iLEAPS and IGAC cross-pollination. Its primary goals are to contribute to community-based scientific development, empower LatAm ECRs and catalyze regional interdisciplinary scientific networking. (Information in Spanish and Portuguese here: <https://niboe.info/laecess-sistema-tierra-etapas-iniciales-carrera/>)


<https://niboe.info/rede-latino-americana-de-cientistas-do-sistema-terrestre/>)

If you cannot donate equipment at this time, but could donate expertise, please also fill in the survey. Right now, IGAC's capacity is only in matching donors and recipients. Survey link: <https://www.surveymonkey.com/r/JS9SNSG>

Much of the current focus on air quality monitoring in understudied regions right now is on low cost sensor networks, which, in addition to lower upfront instrumentation costs, often require less infrastructure (reduced needs for power/shelter) and less maintenance (fewer consumables). Low cost sensors, however, work best when they are calibrated to reference grade instrumentation in-situ on a semi-regular basis. Donating regulatory-grade monitors that measure criteria air pollutants important for human health or for understanding pollution emission sources (carbon monoxide, tropospheric ozone, lead, nitrogen dioxide, particulate matter, and sulfur dioxide) to scientists that can use this equipment for research and monitoring would be an important first step towards understanding air quality in understudied regions—both for the data they can provide and for their capacity to calibrate low-cost sensors growing in prevalence in the global south. Aerosol size measurements and aerosol chemistry measurements (from in-situ or filter-based analysis) are other key measurements to understand aerosol emission sources. IGAC especially recommends the donation of robust and low-maintenance regulatory-grade monitors for criteria pollutants.

Success story

There has been recent success sending donated equipment to Africa. After attending a scoping meeting for the IGAC African Group on Atmospheric Sciences (<https://igacproject.org/working-groups/anga>), where lack of monitoring on the continent was highlighted as an ongoing issue, Dr. Christine Braban learned that the UK Automatic Urban and Rural Network (AURN) was retiring working TEOM monitors in favor of different technology. She reached out to ANGA to see if they could use the instrumentation, and ANGA passed on the information to AfriqAQ (<https://www.cmu.edu/epp/afriqair/>), a non-profit working in air quality monitoring, outreach, scientific collaboration, and training across Africa. AfriqAQ was able to obtain funds to test, ship, install, and train scientists on the donated TEOMS, installed in both Ghana and Rwanda. Further information in the article here: <https://www.ceh.ac.uk/4000-mile-journey-reference-air-pollution-monitor>.

At this moment, IGAC is only able to collect information from our community about available equipment and available scientists who could use this equipment, and offer this information back to the community in a consolidated form. We cannot guarantee that this initiative will work, but we are interested in trying to see if we can leverage our large network of scientists towards this initiative. This will be an evolving process over time! 



IN MEMORIAM

Dr. Astrid Kiendler-Scharr 1973-2023

Astrid Kiendler-Scharr was a long-time IGAC community member and served on the IGAC Scientific Steering Committee in 2022. We will greatly miss her contributions to IGAC and to atmospheric chemistry as a whole. Astrid was scientific director of the institute for tropospheric research IEK-8, at Forschungszentrum Jülich and full professor at University Cologne, Physics, since 2012. She studied physics at Innsbruck university, Austria and did her PhD at the Max Planck Institute for Nuclear Physics, Heidelberg in Germany. Since her PhD thesis she was an expert in the development and application of mass spectrometric techniques for the detection of trace species in the atmosphere. Her research focus was on atmospheric chemistry and the formation of secondary aerosols. She was lead author of the IPCC sixth assessment report chapter on short lived climate forcers. Since 2021 she was also chair of the German climate consortium, DKK.

A memorial page where people can share their memories of Astrid is located here: <https://blogs.fz-juelich.de/zweikommazwei/2023/02/07/prof-dr-astrid-kiendler-scharr-1973-2023-kondolenzbuch/>



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