igacproject.org

IGACnews

coordinating and fostering atmospheric chemistry research towards a sustainable world

issue 51
february 2014

SCIENCE FEATURE:

The Role of Images in Environmental Communication

POINT OF VIEW:
In Search of Big Game

YOUNG SCIENTIST PROFILE:
N'Datchoh Evelyne Toure

SCIENCE FEATURE:
Atmospheric Chemical Kinetic Data Evaluation

GLOBAL IGBP CHANGE

contents

3

16

departments

igac sponsored events

features

open submissions

Please help!
Please help us improve the aim, scope, structure, and usability of the IGAC newsletter by completing a **brief, seven question survey**. It will take but a few minutes to shape years of newsletters to come.

Editor: Megan L. Melamed
Assistant Editor: Jeff Jennings
Newsletter Design: Robin L. Strelow

IGAC was formed in 1990 to address growing international concern over rapid changes observed in Earth's atmosphere. IGAC operates under the umbrella of the International Geosphere Biosphere Programme (IGBP) 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). The IGAC European Project Office is hosted by the Italian National Research Council and by the European Commission Network of Excellence (ACCENT Plus). 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.

point of view

In Search of Big Game

In early October the members of the IGAC Scientific Steering Committee (SSC) descended on Kruger National Park in South Africa for its 28th Annual Meeting. We were hosted by IGAC SSC member Kobus Piennar who selected an excellent venue and was a great wildlife enthusiast. In many respects Kruger National Park was a very apt place to have the SSC Meeting. While there, members took the opportunity in the morning and evening to search for the big five game (Elephant, Lion, Leopard, Water Buffalo and Rhino), whilst in the day we worked on IGAC's big game issues. The two biggest 'elephants' in the room were synthesising the achievements of IGAC to date in anticipation of IGBP ending in 2015, and developing IGAC's role as a central project in the new Future Earth initiative that will replace IGBP.

IGAC leadership is engaged in synthesizing its rich history of supporting science from our inception in Dookie, Australia in 1988 to the present. We have been in contact with our former chairs and executive officers to historically map out the development and scientific impacts of IGAC over its lifetime. The next IGAC Newsletter will feature an article on the history of IGAC. In addition, as part of the Final IGBP Synthesis, IGAC will publish a peer-reviewed article highlighting three overall achievements of IGAC; synthesis and integration, underpinning scientific activities, and capacity building. IGAC is looking back in order to look forward as the landscape of the international science community evolves with the new Future Earth Initiative.

The overall goals of Future Earth include developing knowledge for responding effectively to the risks and opportunities of global environmental change, supporting transformation towards global sustainability in the coming decades, and mobilizing global science communities while strengthening partnerships with policy-makers and other stakeholders to provide sustainability options and solutions. The IGAC SSC recognised the potential for both the fundamental and applied science that IGAC undertakes to be a cornerstone of Future Earth. IGAC has therefore chosen to embrace the opportunity of joining Future Earth, and is already working as a constructive partner in development of this new initiative. IGAC recognizes that atmospheric chemistry research is a critical component for cross disciplinary issues like energy and urbanisation, and that we can maintain our fundamental science while helping the world towards a more sustainable future. IGAC will transition to Future Earth sponsorship over the next couple of years while maintaining our sponsorship with IGBP until it ends in 2015. In addition, IGAC will continue to be sponsored by iCACGP during this transition and beyond.

The IGAC SSC at the 28th Annual Meeting, Kruger National Park, South Africa.

The IGAC SSC also reviewed current, emerging and proposed activities during the meeting. There is a great deal of current activity in IGAC with new initiatives booting up in biomass burning, atmospheric chemistry and health, chemistry-climate modelling and a major effort to recognize the importance of fundamentals of atmospheric chemistry nationally and internationally (see Abbatt et al, Atmospheric Environment, 84, 390-391, 2014).

Another major topic of discussion at the IGAC SSC meeting was the upcoming joint iCACGP and IGAC symposium/conference to be held in Natal, Brazil in September 2014. The programme outline was presented by IGAC SSC member and Scientific Program Committee co-chair Yinon Rudich. The programme outline indicated a very exciting conference including a wide range of cutting edge atmospheric chemistry and the opportunity to highlight for the first time burgeoning science taking place in Latin America.

We look forward to seeing you all in Brazil!
Sincerely,
IGAC Co-Chairs Allen Goldstein and Paul Monks

2014 IGAC Scientific Steering Committee

The 2014 IGAC Scientific Steering Committee sees the departure of **Karla Longo** of the Brazilian National Institute for Space Research and **Kobus Pienaar** of North-West University. We would like to thank Karla and Kobus for their substantial efforts and continuous dedication during their time with IGAC.

In their stead we welcome two new members, **Judith Hoelzemann** of Federal University of Rio Grande do Norte in Natal, Brazil and **Nouredinne Yassaa** of Centre de Développement des Energies Renouvelables in Algiers, Algeria.

Judith Hoelsemann is a permanent Professor of Physical and Chemical Atmospheric Processes at the Federal University of Rio Grande do Norte (UFRN) in the city of Natal/Brazil. She studied Geophysics at the University of Cologne/Germany and did her PhD at the Max Planck Institute for Meteorology at the International Max Planck Research School for Earth System Modelling in Hamburg/Germany, before spending her postdoc and working at the Brazilian National Institute for Space Research in São Paulo/Brazil for a period of six years. Her main research interests are: Air quality observations and modeling, emissions, feedbacks between atmospheric chemistry and climate, aerosols and chemical data assimilation. Judith is vice-coordinator of the universities' Graduate Program in Climate Sciences (PPGCC), and teaches Air Pollution undergraduate classes for soon-to-be environmental engineers, as well as Atmospheric Chemistry, Air Pollution and Environmental Modeling in the PPGCC graduate program. Judith is actively involved in the creation of a very recently started new bachelor course in Meteorology at UFRN, as well as in the foundation of a new Department of Atmospheric and Climate Sciences at the university that will soon host the meteorology course, the PPGCC graduate program and all researchers involved. Judith is also coordinator of the 13th iCACGP/IGAC-2014 Symposium/Science Conference that will take place in Natal/Brazil.

Prof. Dr. Noureddine Yassaa is the Director of "Centre de Développement des Energies Renouvelables" in Algeria. He is also a Professor of Chemistry at the University of Science and Technology Houari Boumediene (USTHB) in Algiers, Algeria and leading a research group in Environmental Science. He received his doctorate in Chemistry in 2001 from the University USTHB. He conducted some of his doctoral research at the Institute for Atmospheric Pollution, National Research Council (IIA-CNR) in Rome, Italy. He worked at the Max-Planck Institute for Chemistry (MPI-C) in Mainz, Germany as a Research Scientist between 2004 and 2008 and then as a Visiting Scientist between 2008 and 2012. From 2010 to 2013, he served as the President of the Scientific Committee of the Organic Chemistry Department at USTHB. Prof. Yassaa is a member of the editorial board of Atmospheric Measurement and Techniques and an expert reviewer of several national and international research projects. He is also coordinator of the ChArMEx (the Chemistry-Aerosol Mediterranean Experiment) project in Algeria and a member in a number of national and international committees. In 2010 he received the first CHEMRAWN VII (Chemical Research Applied for World Needs) Prize for Atmospheric and Green Chemistry from the International Union for Pure and Applied Chemistry. His current research focuses on atmospheric chemistry, sustainable development, renewable energy, and climate change.

Judith and Nouredinne join the IGAC SSC's 16 continuing members under Co-Chairs **Paul Monks** and **Allen Goldstein**.

New Fundamentals in Atmospheric Chemistry Article

In collaboration with our parent organization iCACGP, the most recent achievement from IGAC's Fundamental Atmospheric Chemistry activity is the publication in Atmospheric Environment of the article, *New Directions: Fundamentals of atmospheric chemistry: Keeping a three-legged stool balanced.*
View the article **online** or download the **pdf**.

COST/SOLAS book on 'Ocean-Atmosphere Interactions of Gases and Particles' now available as open access

The COST/SOLAS book 'Ocean-Atmosphere Interactions of Gases and Particles' by P.S. Liss et al. is now published as an open access book. The book is an important part of the legacy of the first decade of SOLAS and is acting as the launching point for the 'new' SOLAS and its future implementation.

Production of the book was supported and funded by the EU COST Action 735 and coordinated by SOLAS.

Download the open access edition.

Call for applications to the Future Earth Engagement Committee

The Science and Technology Alliance for Global Sustainability invite applications for the Future Earth Engagement Committee.

Future Earth is a 10-year international research programme that will provide critical knowledge required for societies to face the challenges posed by global environmental change and to identify opportunities for transformations towards global sustainability. Future Earth brings together thousands of scientists of all disciplines, natural and social, as well as engineering, the humanities and law.

The Future Earth Engagement Committee is a strategic advisory group whose primary purpose is to foster in-depth and innovative interactions between science and society to address global environmental change and transform towards global sustainability. The Engagement Committee will provide strategic advice from a user perspective on Future Earth research, engagement and other activities, and will develop high-level engagement with stakeholders including policy-makers, business and civil society.

Working together with the Future Earth Science Committee and the Secretariat, the Engagement Committee will advise the Governing Council on research priorities for Future Earth, will help to identify key stakeholders at the global, regional and national levels, will advise on how best to engage them in Future Earth, and will provide leadership and creative thinking on how to bridge the gap between knowledge and solutions for sustainable development. This includes co-design of research agendas, co-production of knowledge, and co-dissemination of perspectives, evidence and knowledge claims in government, business and civil society, so that scientific knowledge makes a larger contribution to societal debate and decision-making.

futureearth
research for global sustainability

Those wishing to apply or to nominate an applicant are invited to **review the call and complete the application form**.

The Future Earth Engagement Committee is expected to be appointed in June 2014.

The process to establish the Engagement Committee is led by the Science & Technology Alliance for Global Sustainability, currently acting as the Governing Council of Future Earth, and facilitated by the Future Earth interim Secretariat.

All applications should be submitted not later than 14 March 2014.

PLEASE HELP!

Please help us improve the aim, scope, structure, and usability of the IGAC newsletter by completing a brief, seven question survey. It will take but a few minutes to shape years of newsletters to come.

New emerging IGAC/SPARC activity: ACAM

Atmospheric Composition and the Asian Summer Monsoon (ACAM) is an emerging IGAC/SPARC activity that will be developed more fully over the next two years. It will ultimately be organized around four initiatives:

- organizing data sharing for ACAM-relevant measurements;
- forming a partnership with the CCMI activity to facilitate two-way interaction;
- field campaign concept development;
- sponsorship of training schools on model use for ACAM regional young scientists.

Submit Articles to the next IGAC newsletter

The next IGAC newsletter is now accepting article submissions. Workshop Summaries, Science Features, Activity News, and Editorials are all acceptable and desired. Science Features are to be submitted at a recommended length of approximately 1500 words with 1-2 images. All other submissions must be approximately 600 words and have a maximum of 1 image. Images must be high resolution .png file. The deadline for submissions for the June issue of the IGAC Newsletter is 30 May 2014. Any questions concerning content or formatting may be sent to info@igacproject.org.

IGAC Now on Social Media

IGAC is now on Twitter and Facebook in an effort to further advance international scientific cooperation and serve as a resource to the public. Please join us to stay apprised of the most current news on conferences, workshops and publications. And let us hear from you on how to improve the international conversation, **@IGACProject**.

IGBP/IGAC Workshop: Developing a Strategic Framework for Integrated Programs on Air Pollution and Climate Change

5-7 November 2013 • Boulder, Colorado, USA

Jeff Jennings[1]

[1]IGAC International Project Office, University of Colorado Boulder/CIRES, USA, jeff@igacproject.org

The **IGBP/IGAC Air Pollution & Climate Initiative** held its third workshop on *Developing a Strategic Framework for Integrated Programs on Air Pollution and Climate Change* in Boulder, Colorado, 5 -7 November 2013. The workshop is the next step in an initiative that most recently released *Time to Act: The Opportunity to Simultaneously Mitigate Air Pollution and Climate Change*, a brief report urging a collaborative effort across the natural and social sciences to better inform the policy community. Maintaining this interdisciplinary focus, the November workshop was preceded by a Preliminary Report that set the agenda by compiling findings from interviews of over 50 natural and social scientists, policymakers and private sector representatives on the challenges and potentials for integration.

With 32 participants representing 15 countries and each of the four natural science, social science, policy, and private sector communities, the aim was to outline the Strategic Framework for release in summer 2014. To this end, workshop participants over the first two days held panel presentations, breakout groups and overarching discussions on themes identified in the *Preliminary Report*. Panels addressed current organizational efforts on integration, working with national and regional regulatory and institutional systems, improving interactions across the four communities to facilitate integration, and information needs for effective integrated programs.

From the discussions generated during these panel sessions, workshop participants voted on which issues were most pressing. These determined the challenges for breakout groups to address; each group explicitly defined the problem, devised implementable solutions and identified pertinent information needs. Groups reported their findings on correcting current regulatory and institutional gaps, creating a single community to address integration directly, and defining the *Strategic Framework*.

This latter effort to define the *Strategic Framework* was the focus of day three, which saw substantive progress in applying outcomes from the earlier sessions. The concluding day began with input from each participant on the most important implications of the workshop. Four thematic areas were derived from this compilation, each serving as the subject of a breakout group. In their thematic areas groups defined an attainable goal and actions to achieve it, the results serving as the foundation upon which authors will build the *Strategic Framework*.

Participants of the IGBP/IGAC Air Pollution & Climate Initiative 2013 workshop held at CIRES, University of Colorado, Boulder, CO, USA.

Over the coming months co-authors from each of the four arenas will be working closely to draft the Strategic Framework, designed to serve as a guiding document for integrated air pollution and climate change policy and program design. A summary report for scientific organizations, article in a reputed journal, and article in the popular press are intended to accompany the *Framework*'s publication.

Air Pollution & CLIMATE
a science-policy dialogue

Capacity Building Workshop on Regional Climate and Air Quality Modelling for West Africa

7-19 October 2013 • Abidjan, Cote d'Ivoire

Fabien Solmon[1], **Abdourahamane Konaré**[2]

[1]The Abdus Salam International Center for Theoretical Physics, Italy, solmon@ictp.it
[2]Felix Houphouet-Boigny University, Cote d'Ivoire, konare@yahoo.com

West Africa is a region featuring intense and diverse sources of chemical compounds (both natural and anthropogenic), complex atmospheric dynamics, and a fast demographic development associated with environmental pressure and population exposure. Recent international programs like **AMMA** and **WASCAL** have been emphasizing both the need for experimental and modeling studies aiming at understanding the complex West African system, and the need for strengthening regional researcher networks in order to sustain this research in time.

In this context, the workshop was organized through a joint effort between the Felix Houphouet Boigny University (HBU) of Abidjan, the Ministry of Science and Education of Cote d'Ivoire, and the Abdus Salam **International Center for Theoretical Physics** (ICTP). The workshop received support from the International Global Atmospheric Chemistry Project (IGAC). Overall 40 participants attended the workshop, which was divided into about 10 theoretical lectures in the mornings and computer lab sessions in the afternoons. Most of the participants were students and researchers from Africa with diverse scientific backgrounds and interests in the fields of climate, hydrology, air quality, and oceanography.

Topics presented in morning lectures consisted of (i) the West African climate system, its variability and possible future climate change and (ii) atmospheric chemistry processes (gas and aerosols from natural and anthropogenic sources) and their relation with the West African regional climate. A couple of lectures specifically targeting biomass burning processes and health impacts of atmospheric pollution in West African megacities were also proposed.

As for practical sessions, they were based on the use of the RegCM4 ICTP regional climate model that has been installed in a computer room of the University. These sessions allowed participants to get an introduction to numerical modeling (theory, important steps and constraints), while the more advanced participants could explore different options of the model (atmospheric chemistry, convection, etc.). Due to heavy computing burden, this was quite a technical challenge and the organizers are particularly grateful to the technical support provided by HBU and ICTP.

Finally a field trip was organized on the last day of the conference to visit the Lamto geophysical and ecological station, a remote observatory located in humid savannah operated by HBU, and which notably takes part in the **IGAC-DEBITS Africa** (IDAF) project. This was the occasion to discuss challenges and synergies relative to the integration of experimental data and modeling. Overall we hope that this successful workshop will initiate/reinforce contact and activities between the different partners, through student programs and computing infrastructure developments.

Participants of the Capacity Building Workshop on Regional Climate and Air Quality Modelling for West Africa held in Abidjan, Cote d'Ivoire in October 2013.

Workshop on Health, Agricultural and Water Risks Associated with Air Quality and Climate in Asia

9-12 July 2013 • Boulder, Colorado, USA

Mary Barth[1], Greg Carmichael[2], Christine Wiedinmyer[1], Louisa Emmons[1], Steve Massie[1], Paty Romero-Lankao[1]

[1]National Center for Atmospheric Research, USA, barthm@ucar.edu, christin@ucar.edu, emmons@ucar.edu, massie@ucar.edu, prlankao@ucar.edu
[2] University of Iowa, College of Engineering, USA, gcarmich@engineering.uiowa.edu

Asia is a region with significant emissions of greenhouse gases, aerosols and other pollutants, which pose health risks to urban populations, agriculture, and water resources. Emissions of these aerosols and gases have increased drastically over the last decade due to economic growth and urbanization and are expected to rise further in the near future. As such, the continent plays a role in influencing climate change via its effluent of aerosols and gaseous pollutants. Asia is also susceptible to adverse climate change through interactions between aerosols and clouds, which potentially can have serious implications for freshwater resources. This workshop, supported by the NSF Earth System Modeling Project on Chemistry and Climate in Asia, aimed to foster collaborations between the atmospheric chemistry, climate, health, agriculture, hydrology, and social sciences communities and to inform the community about accessible research tools for studies on chemistry and climate in Asia and their impact on humans.

The workshop was held at the National Center for Atmospheric Research (NCAR) in Boulder, Colorado, 9-12 July 2013 and held joint air quality and health sessions with the Fifth Biannual Colloquium on Climate and Health. About 55 scientists from Asia, Europe, and the United States participated in the workshop and 30 more attended the joint air quality and health sessions. The workshop began with keynote talks by V. Ramanathan, (UCSD), A. Cohen (HEI), J. Burney (UCSD), and R. Kotamarthi (Argonne National Lab.) and were followed by talks on various tools including climate modeling at different scales, emissions, chemical weather forecasting, satellite observations, and adjoint modeling. Presentations on cross-disciplinary activities highlighted air quality and health, urbanization, government policies, and co-benefits of improving air quality and reducing effects on future climate by reducing pollutant emissions.

Two breakout sessions were held that discussed needed data or tools to further scientific understanding of the cross-disciplinary activities and important scientific questions addressed by cross-disciplinary projects. The participants agreed it was important to use a holistic approach for a 2030 climate scenario. For example, there would be synergistic benefits when connecting air quality to urbanization and rural regions, agriculture, and health, or when combining water nutrients and pollutants with economic policies. It was recommended to take advantage of intervention studies, such as the reduced emissions during the Beijing Olympics, to investigate, in a holistic manner, the impacts on air quality, humans, and ecosystems. A summary article is planned to describe tools from different communities that can be used together for future cross-disciplinary projects focused on Asia. The target audience includes students and early career researchers to familiarize them with research tools in other disciplines, such as climate models, atmospheric chemistry models, vegetation models that respond to atmospheric changes, hydrology models, observational data sets (satellite and in situ), statistical tools used in health and environmental risk studies, etc.

More information on the workshop can be found at the NCAR Chemistry and Climate in Asia web page. The agenda, participants, and copies of the presentations can be found at this web site.

Participants of the Workshop on Health, Agricultural and Water Risks Associated with Air Quality and Climate in Asia held at NCAR, Boulder, CO, USA.

Workshop on the Development of a Community Historical Emission Inventory

20-21 November 2013 • Hamburg, Germany

Claire Granier[1], Gregory Frost[2], Jean-François Lamarque[3]

[1]LATMOS/IPSL, France; NOAA/ESRL and University of Colorado/CIRES, USA; Max Planck Institute for Meteorology, Germany, Claire.granier@latmos.ipsl.fr
[2]NOAA/ESRL and University of Colorado/CIRES, USA, gregory.j.frost@noaa.gov
[3]National Center for Atmospheric Research, USA, lamar@ucar.edu

In recent multi-model comparison efforts that simulate the past, current and future composition of the global atmosphere, including the IGAC-SPARC Atmospheric Chemistry and Climate Model Intercomparison Project (ACCMIP) and the Chemistry-Climate Model Initiative (CCMI) project, the models' ability to reproduce observed trends depends strongly on the specific surface emissions used. More such modeling exercises are planned during the coming years, either to forecast atmospheric composition at the regional and global scale or to quantify changes in atmospheric composition during past decades.

To support these modeling efforts, the global emissions community, led by IGAC's Global Emissions InitiAtive (GEIA), has launched a new initiative to develop a comprehensive community historical inventory for the 1750-2015 period. The inventory will provide annual and sectoral anthropogenic and biomass burning emissions for ozone precursors, aerosols and their precursors, greenhouse gases and halogenated compounds. The emissions will be provided at a spatial resolution of 0.1-0.5°.

A workshop was held in November 2013 in Hamburg, Germany, to define the process to develop this new dataset. The workshop, sponsored by IGAC, ACCENT-Plus, MACC, and PEGASOS, was organized by LATMOS (France), the NOAA Earth System Research Laboratory (USA), the National Center for Atmospheric Research (USA), the Climate Service Center – Germany (Germany), and the Max-Planck Institute for Meteorology (Germany). 35 scientists from Europe, North America, Africa and Asia participated in the workshop (www.geiacenter.org). The workshop focused on anthropogenic and biomass burning emissions; natural emissions will be addressed in another workshop.

The most recent anthropogenic inventories developed in Europe, the USA, the Middle East, Africa and Asia were discussed, with specific focus on different emission sectors, i.e., transportation, industrial activities, shipping, and agriculture. The possibility of updating emissions to the most recent years using inverse modeling techniques was also discussed.

The workshop covered advancements in determining recent biomass burning emissions information from satellite observations, such as active fires, burned areas or fire radiative power. Long-term historical time series of fire emissions simulated by dynamical vegetation models were also considered.

Emissions data still have large uncertainties, so the participants suggested developing a reference inventory together with well-documented alternative datasets that could be used for sensitivity studies at both the global scale and in different regions. This approach could provide a measure of the uncertainty on the reference inventory.

It is expected that the GEIA emissions community will be entrained in this initiative, in particular through participation in working groups which are currently being formed to work on priority issues identified during the meeting, including:

- Extension of the dataset to the most recent years using available regional data and inverse modeling;
- Consistency of CO_2 emissions with those of other compounds;
- Speciation of VOCs and PM;
- Emissions from agriculture;
- Evaluations of fire emissions, land-use data, and emission factors;
- Emissions related to shipping;
- Emissions from flaring and oil and natural gas extraction;
- Seasonal variations in emissions;
- Data gridding issues and associated proxies;
- Uncertainties and propagation of uncertainty;
- On-line systems for calculating emissions;
- System for quick check/evaluation of emissions datasets;
- Documentation and metadata.

More information on the working groups and their activities will be available on the GEIA website as this information becomes available.

Task Force on Hemispheric Transport of Air Pollution Workshop

5-6 December 2013 • San Francisco, CA, USA

Terry Keating[1], Frank Dentener[2] (Co-Chairs of TF HTAP)

[1]US Environmental Protection Agency, USA, keating.terry@epa.gov
[2]European Commission – Joint Research Centre, Italy, frank.dentener@jrc.ec.europa.eu

The Task Force on Hemispheric Transport of Air Pollution (TF HTAP) held a modeling workshop at the U.S. Environmental Protection Agency's regional office in San Francisco on 5-6 December 2013. More than 50 experts attended the meeting in person with another 30 experts participating in portions of the meeting via web conferencing. The main focus of the workshop was the launch of a new round of cooperative global and regional modeling experiments focused on the 2008-2010 time period. As part of the TFHTAP's 2012-2016 work plan, the new experiments are intended to help improve our understanding of the relative role of regional and extra-regional sources of air pollution in different regions across the Northern Hemisphere. The presentations from the meeting are available on the HTAP website at http://www.htap.org/meetings/2013/2013_12/Agenda.html.

2008-2010 Emissions and Experiment Design

The workshop participants reviewed the experiment design, output data requested, and data submission instructions, which are provided on the HTAP wiki under Work Package 2.2 and in HTAP2_experiment_specs_v3a.docx. The workshop participants also discussed some initial modeling results using the new HTAPv2 global emissions mosaic developed for the 2008-2010 experiments. The current version of the emissions data sets (HTAP_v2.2) are available on the web at http://edgar.jrc.ec.europa.eu/htap_v2/index.php?SECURE=123.

Revised Schedule

Based on the workshop discussions, a new schedule of target dates was established for the cooperative experiments:

February 2014 A set of global models provide outputs for use by regional models to define boundary conditions

1 April 2014 Global models submit full outputs for base case simulations for use in model-observation evaluation

1 June 2014 Global models sumit full outputs for sensitivity simulations for source/receptor parameterization

1 October 2014 Regional models submit outputs for comparison to global models

31 December 2014 Modeling outputs are "frozen" for development of publications

1 June 2015 An overview report on the status of results is submitted to the LRTAP Convention

These targets are not meant to delay or exclude any work, but are intended to provide realistic expectations for the analysis that will utilize the modeling results. Analyses that can proceed faster than this schedule are encouraged and modeling that comes in after these targets will be considered on a case-by-case basis.

Future Meeting Plans

The workshop participants discussed evolving plans for several workshops over the next year to discuss different aspects of the TF HTAP work plan:

- Health Impact Assessment Workshop (proposed), tentatively the week of 12 May 2014, in Bonn, Germany.
- Ecosystem Impact Assessment Workshop as part of the International Conference on Ozone and Plants, 19-21 May 2014, Beijing, China.
- MICS-Asia/TF HTAP Joint Workshop on Regional to Global Modeling, 22-23 May 2014, Beijing, China

Formation of the South Asia Work Group

Lastly, the TF HTAP discussed the formation of a South Asia Work Group to facilitate cooperation between participants from South Asian countries (including India, Pakistan, and Nepal) as well as participants from other parts of the world interested in the South Asia region. Initial plans for the work group were presented by Gufran Beig at the workshop and will be incorporated into the HTAP work plan on the wiki.
More information about the TF HTAP is available at www.htap.org.

LRTAP Long-range Transboundary Air Pollution — Task Force on Hemispheric Transport of Air Pollution

IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation

M. Ammann[1], R. A. Cox[2], J. N. Crowley[3], M. E. Jenkin[4], A. Mellouki[5], M. J. Rossi[6], J. Troe[7], T. J. Wallington[8]

[1]Paul Scherrer Institut, Switzerland, markus.ammann@psi.ch
[2] University of Cambridge, UK, rac26@cam.ac.uk
[3] Max-Planck-Institut für Chemie, Germany, john.crowley@mpic.de
[4] Atmospheric Chemistry Services, UK, atmos.chem@btinternet.com
[5] ICARE (Institut de Combustion, Aérothermique, Réactivité et Environnement)/OSUC, CNRS (Centre National de la Recherche Scientifique) – France, mellouki@cnrs-orleans.fr
[6] Paul Scherrer Institut, Switzerland, michel.rossi@psi.ch
[7] University of Göttingen, Germany, shoff@gwdg.de
[8] Ford Motor Company, USA, twalling@ford.com

Overview

The IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation consists of internationally recognized experts from universities, government labs, and industry and provides evaluated chemical data for atmospheric chemistry used in global, regional and urban climate and air quality atmospheric models. Over the past decade we have published our evaluations in the form of peer reviewed articles as part of a special issue in *Atmospheric Chemistry and Physics* (http://www.atmos-chem-phys.net/special_issue8.html), with the most recent article providing evaluated data for heterogeneous reactions of atmospheric importance (http://www.atmos-chem-phys.net/13/8045/2013/acp-13-8045-2013.html). Parallel to that we are continuously updating individual reactions on our website, which has recently moved to the ETHER site maintained by CNRS-Paris http://iupac.pole-ether.fr/

Historical remarks

First installed as CODATA Task Group on Chemical Kinetics, the IUPAC Subcommittee for Gas Kinetic Data Evaluation for Atmospheric Chemistry started its work 1977 in response to the need to provide an internationally judged data set for modeling the impact of manmade pollutants with an emphasis on stratospheric composition. Later sponsored by IUPAC, the group extended its emphasis to tropospheric composition, and continuously expanded and updated its evaluations in a series of nine peer reviewed articles in *J. Phys. Chem. Ref. Data*. The recent move to publish the evaluations in *Atmos. Chem. Phys.* complied with the needs of the community for open access to the evaluations. The expansion of the group's activities to heterogeneous processes has led to the name change, now Task Group on Atmospheric Chemical Kinetic Data Evaluation, to reflect the broader scope of evaluations.

Data evaluation

It is essential that models of atmospheric chemistry contain up-to-date chemical mechanisms to provide the required accuracy and facilitate comparison of results from different models. It is also important that global chemical transport models, climate or earth system models contain suitable mechanisms in simplified form that is suitably derived from the detailed mechanism. The results of laboratory experiments, which provide the kinetic and mechanistic data necessary to describe chemical transformations in the atmosphere, are not always unambigu-

The IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation during its 40th Meeting held near Montreux, Switzerland, June 2013. From left to right: John Crowley, Tony Cox, Tim Wallington, Jürgen Troe, Michel Rossi, Markus Ammann. Missing: Mike Jenkin, Wahid Mellouki.

ous, especially if results using different methods obtained by different research groups are available. The use of laboratory data therefore requires a substantial effort of compilation, review, and assessment before preferred or recommended values can be made available for the atmospheric science community.

By providing a detailed evaluation and preferred parameterizations, activities such as performed by this IUPAC task group and also by the NASA-JPL panel go further than compilations of rate coefficients and products. See Cox (2012) for an extensive review of data evaluation in atmospheric chemistry.

The evaluation process itself starts with a consideration of to what degree the experimental data can be applied to atmospheric conditions of concentration, pressure and temperature. Next, an assessment of the experimental procedures is performed, followed by comparison of the results obtained by different experimental approaches and reported by different groups. The data set as a whole then provides the basis for preferred values of a given process and for estimates of the statistical errors and uncertainties. In order to make such evaluations, the panel members draw on extensive experience from their own research groups in using (and evaluating data from) the many experimental methods that have been applied.

The evaluations by the IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation have evolved along with developments in atmospheric chemistry over the past 50 years. Initially driven by the early accounts of photochemical processes in the gas phase that control the stratospheric ozone chemistry and those that control air pollution in the troposphere, the level of detail and knowledge has expanded enormously, and has also led to community wide agreement of how the kinetics of gas phase chemical reactions and photochemical processes should be described and parameterized. This facilitated the establishment of a framework for the data evaluation and dissemination activities of the IUPAC group. Currently the Task Group is furthering this process in the direction of providing recommendations on the website in machine readable format to allow online updating models with the most recent recommendations.

The latest developments on heterogeneous processes

The recognition of the importance of heterogeneous processes with aerosol particles for the gas phase chemistry, the aerosol composition, as well as their effects on climate and human health has led to parallel efforts in establishing suitable descriptions and parameterizations for gas to particle transfer and reactions on the surface and within the bulk of the particles. Over the past decade these concepts have converged substantially (Kolb et al. 2010), so that we could expand our evaluation activity into heterogeneous processes for both solid and liquid particles. One important aspect is presentation of these processes in a homogenized manner by defining the essential kinetic parameters irrespective of the physical properties of the substrate, such that solids and liquids are treated in the same way. This means that the evaluation of heterogeneous reactions has been entirely refurbished from previous evaluations and also goes beyond what other evaluations have provided. The results of these recent efforts are laid down in the two most recent volumes of the series in *Atmos. Chem. Phys.*, Crowley et al. (2010)(http://www.atmos-chem-phys.net/13/8045/2013/acp-13-8045-2013.html) covering processes on solid substrates such as ice, mineral dust and acid hydrates, and Ammann et al. (2013) (http://www.atmos-chem-phys.net/13/8045/2013/acp-13-8045-2013.html) covering processes on liquid substrates. Both volumes include a range of key reactions in aqueous particles relevant to the marine boundary layer, in other aqueous and sulfuric acid particles, on mineral dust and on ice, which are all highly relevant to the IGAC community. Similar to earlier assessments dealing with gas phase reactions, these volumes start with the presentation of summary tables, which provide an overview of the systems evaluated and over some of the essential kinetic parameters. This is followed by a detailed description of the kinetic and thermodynamic framework, which forms the basis of the evaluation. This section also includes some more detailed descriptions of relevant information pertaining to the substrates. For each of the non-reactive or reactive process considered, a datasheet is presented in the form of appendices that follow the format of our earlier evaluation of gas phase reactions.

In many processes covered by the two recent volumes on heterogeneous reactions, the experimental data base is poor shape. Even for key processes, such as the reaction of N_2O_5 with aerosol particles, there are significant uncertainties in our understanding of the impact of this reaction on tropospheric budgets of nitrogen oxides and halogens. For important species, such as HO_2 radicals, there are relatively few experimental studies and the results from these studies are in conflict, so that no recommendation for parameters driving its loss in the particulate phase could be made. In other cases, inconsistencies among different experiments were resolved in retrospect by employing revised descriptions or updated thermodynamic information (e.g., water content) as a basis for reanalysis of older experimental data. This underlines the value of such evaluation work to provide the best possible state of knowledge to the atmospheric science community.

The website

Since 1999, the group has maintained a website that was hosted first in Cambridge and has recently moved to the

ETHER site maintained by CNRS-Paris (http://iupac.pole-ether.fr/). The main aim of the website is to provide the most up-to-date datasheets and summary tables to the atmospheric science community. Apart from the datasheets available for download, the website also contains guides to the datasheets and options to search for specific reactions and recent updates.

The website is updated as new data become available on reactions from past published volumes. The headers of the data sheets provide a record of when the reaction was last reviewed and the last change in the recommended values. As an example consider the reaction of HO with NO_2. This is an especially important reaction in ozone chemistry as it removes two radical species which are active in ozone formation and produces a relatively long-lived, relatively stable product, HNO_3. This reaction appeared in Volume I of the *Atmos. Chem. Phys.* series in 2004. Important new results on this reaction became available recently and so the data sheet was updated and the new version was posted on the web (http://iupac.pole-ether.fr/datasheets/pdf/NOx13_HO_NO2+M_I.A3.43.pdf).

A new feature to facilitate the usage of the datasheets is provision of a single-line expression to parameterize pressure and temperature dependent gas-phase reactions that can be copied directly into spreadsheets or other programmes. Individual users may register to the website to subscribe to an RSS feed or a mailing list to be informed about updates to the database.

The website is an important method of keeping the data sheets current. Researchers can visit the website and find the latest IUPAC recommendations based upon the latest published data. The IUPAC group is working with CNRS colleagues to add functionality to the website to make it more interactive and to facilitate the direct extraction of data from the website using machine readable files.

Current and future activities

In addition to updating the >1000 data sheets on the website as new data become available, the IUPAC is currently extending the gas-phase database to cover aspects of the degradation of large (>C4) biogenic and anthropogenic hydrocarbons (e.g. terpenes and aromatics). These species play important roles in tropospheric chemistry in global, rural and urban environments. The panel is also evaluating the available data for heterogeneous processes involving tropospheric organic aerosol and soot. The IUPAC group welcomes comments and suggestions from the IGAC community for ways to improve their efforts.

References

Ammann, M. *et al.* , 2013: Evaluated kinetic and photochemical data for atmospheric chemistry: Volume VI – heterogeneous reactions with liquid substrates, *Atmos. Chem. Phys.*, 13, 8045, doi:10.5194/acp-13-8045-2013.

Atkinson, R. *et al.* , 2004: Evaluated kinetic and photochemical data for atmospheric chemistry: Volume I - gas phase reactions of Ox, HOx, NOx and SOx species, *Atmos. Chem. Phys.*, 4, 1461-1738.

Cox, R. A., 2012: Evaluation of laboratory kinetics and photochemical data for atmospheric chemistry applications, *Chem. Soc. Rev.*, 41, 6231-6246.

Crowley, J. N. *et al.*, 2010: Evaluated kinetic and photochemical data for atmospheric chemistry: Volume V - Heterogeneous reactions on solid substrates, *Atmos. Chem. Phys.*, 10, 9059-9223.

Kolb, C. E. *et al.*, 2010: An overview of current issues in the uptake of atmospheric trace gases by aerosols and clouds, *Atmos. Chem. Phys.*, 10, 10561-10605.

young scientist spotlight

N'Datchoh Evelyne Toure

N'Datchoh Evelyne Toure is currently a PhD student in the Laboratoire de Physique de l'atmosphere (LAPA) at University Felix Houphouet-Boigny (Cote d'Ivoire), with supports from the WASCAL project and the ICTP. Her research interest is on understanding the interaction between biomass burning, aerosol emissions and their impact on the West African climate system. She also has interest in understanding dust particle transportation, deposition and how these impact the atmospheric radiative budget in combination with biomass burning and aerosols.

How has the evolution of your early career affected your perceptions of the field?

In my undergraduate studies, I took courses in both physics and chemistry which gave me the necessary foundation to pursue graduate studies in the area of climate and atmospheric science.

Currently, I am applying the basic principles learnt from the undergraduate programme to understand the sources, distribution and life span of aerosols in the atmosphere and how they modify climate. Presently, I am using numerical models and data analysis as the main tool for my studies. This experience gives me a broader perspective beyond theoretical knowledge, for example in understanding limitations and constraints of the models.

What components of your research do you find most beneficial for you and for the atmospheric chemistry community?

Biomass burning is a common practice across Africa in general and West Africa in particular during the dry season as a result of human activities. Fires are set for various reasons ranging from farming and nomad activities to cultural practices. The gases/particles from biomass burning are released into the atmosphere, which impact climate at local, regional and global scales. My research work will improve our understanding of the evolution and distribution of these biomass burning aerosols (black carbon and organic carbon) and interaction with climate at local and regional scales. I study aerosol emissions, transport and deposition processes, direct, semi-direct and indirect effects using mainly a regional climate modelling framework. Furthermore, my plan is also to characterise intraseasonal, interannual and long term variability of these interactions. This is especially relevant in terms of environmental and socio-economic impacts in West African regions.

How do you want your career to progress and where do you think you can ultimately have the greatest impact?

Impacts of climate and atmospheric chemistry on agriculture, health and other areas still remains a major challenge for most African countries. This is a result of lack of experts in this area and also methods to use climate, land use change and emissions information. The main goal of my career is to understand how these burning activities influence and are being influenced by climate and anthropogenic activities. I also want to engage policymakers to develop adaptive strategies and reduce the burden this pollution might have on public health and ecosystems. To achieve this, collaboration and interactions with others scientists around the world is very important.

In what ways will your research change the world around us?

My research can contribute to better understanding of complex interaction between climate, society and ecology and their overall effect on fire patterns in the Western African savannah ecosystem. It will also address the problem of air pollution and its implication on human health in urban and rural areas of Africa.

What was the most important thing you learned from the Capacity Building Workshop on Modelling of Regional Climate and Air Quality for West Africa in Abidjan and to what extent do you address this in your research?

This workshop improved my knowledge on how to model aerosol emissions (natural and anthropogenic) and processes using a regional climate model (RegCM). Results from the exercise during the laboratory session demonstrated how these aerosols could influence the spatial and temporal distribution of the West Africa monsoon. One interesting thing was the interaction with participants at the workshop (mainly from West Africa region) with whom I could share my experience in terms of regional climate modelling. This workshop also gave me an opportunity to meet senior scientists with longer research experience and who are addressing challenges related to my work.

The Role of Images in Environmental Communication

Joanna Boenhert[1]

[1]University of Colorado Boulder/CIRES/CSTPR, USA(joanna.boehnert@colorado.edu)

Public understanding of environmental science is dependent on effective communication. Since environmental communication competes for cultural legitimacy with well-funded advertising and industry lobby groups, who promote very different views of what the Earth's atmosphere can sustain, the imperative for good environmental communication can hardly be overstressed. Environmental communication research and practice is a growing field supporting more effective means of communicating environmental problems and potential solutions. In a seminal paper in the journal *Environmental Communication*, Robert Cox (2007) describes environmental communication as a crisis discipline that must facilitate society's transformation in the face of environmental problems. Similarly, Jared Diamond, author of best-selling book *Collapse* (2005), describes communication failure as central to a society's capacity to respond to signals of environmental danger and its capacity to avoid collapse. Communication is a foundation for appropriate responsive social, technological and political change and the mobilization of effective responses at moments of contingency. The work of transferring scientific knowledge to society is achieved first and foremost through communicative processes.

My own focus is the use of visuals in environmental communication. In a strongly image-oriented society, visuals are a primary means of sense-making for both the general public and policy makers. Images are powerful tools capable of increasing understanding of science and also influencing behavior and social norms. Images can work to reveal human-nature relations by supporting the development of new perceptual and cognitive capacities in a variety of ways. Visual theorists and cognitive scientists describe how visuals can increase human capacity to comprehend and more efficiently synthesize large amounts of new information, leading to expanded cognitive capacities in the face of ever-increasing complexity.

Images often use metaphors to help us learn new concepts and challenge preconceived ideas. Metaphors have the potential to reframe our understanding of an issue by creating new associations and frames of reference. For example, in Figure 1, The Climate Reality Project has used the analogy of engineering to climate science to draw parallels between how we value expertise in these two fields. The image compares a safety assessment of a bridge to one of the climate system. It is easy to understand ourselves as driving along a bridge, but for many people the fact that we are embedded in a climate system is an abstract concept. Thus the image works by contrasting engineering (a concrete science where impacts of risks can be immediate and experts are trusted to evaluate risks) to climate science (a science where impacts are delayed and warnings of risks are denied by non-experts). In drawing this comparison, the image challenges the logic of ignoring the expertise of climate scientists. It should be noted here that The Climate Reality Project has been conservative with its data as the

Figure 1. Consensus Bridge, The Climate Reality Project. (http://climaterealityproject.org).

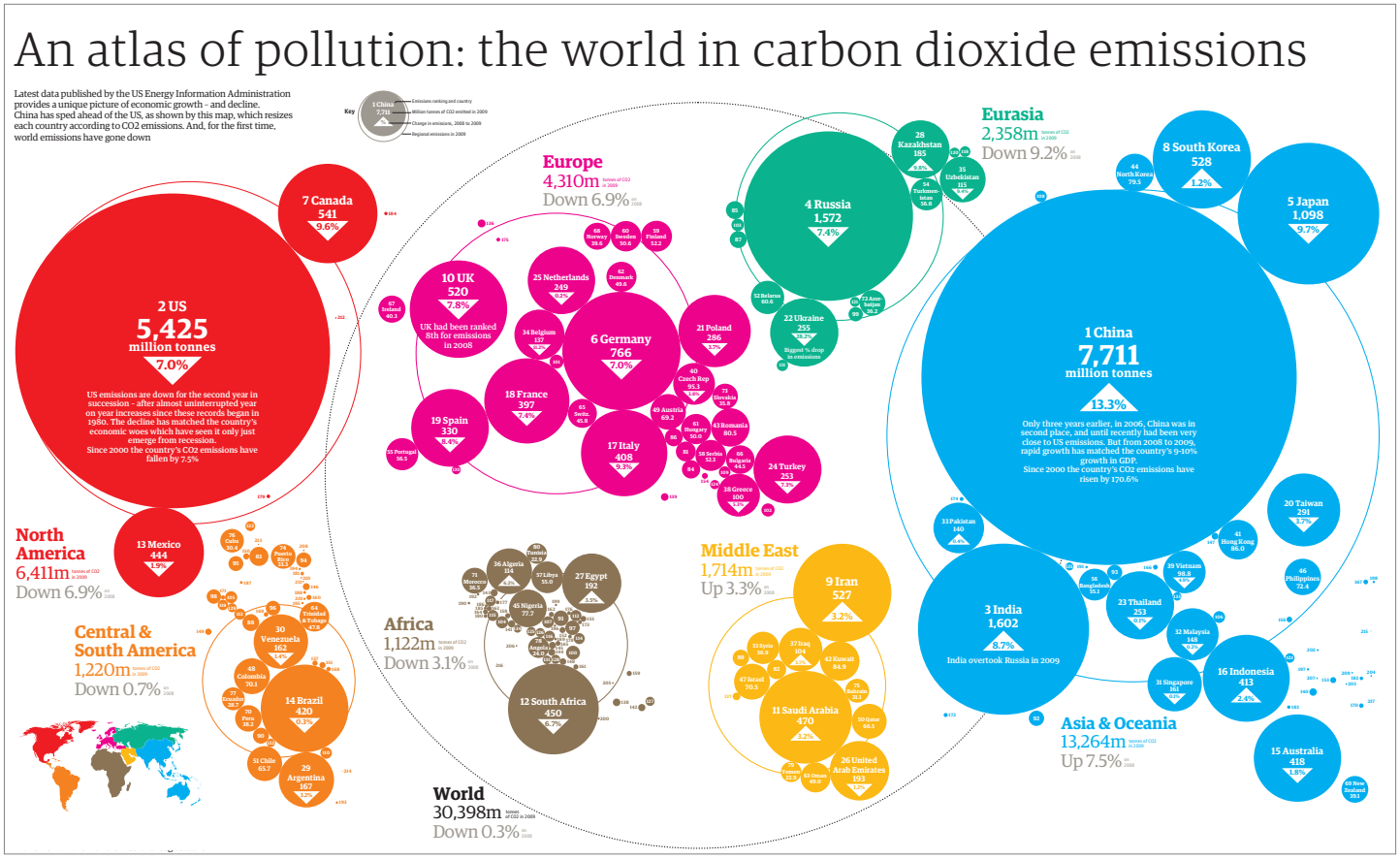


Figure 2: An Atlas of Pollution: The World in Carbon Dioxide Emissions, Copyright Guardian News & Media Ltd 2011.

percentage of peer reviewed papers on climate change that reject human actions as the cause is much less than 1% (Oreskes 2004, Powell 2014). The image was popular on Twitter and has worked to popularize this 97% agreement figure.

Images are an effective means to display non-linear, dynamic systems and reveal patterns and relationships in complex systems. Network and system visualizations are emerging methods that not only communicate complexity but support analysis. By illustrating relationships, images can work to develop relational perception, i.e. ways of seeing that help individuals to not only understand human-nature relations as an intellectual theory – but perceive interdependence, connections, interactions, influences, dynamics and relationships in our environmental context and socio-economic systems.

In regards to global environmental change communication, there are many specific ways in which images can work to facilitate learning. These include illustrating atmospheric processes, mapping global and local impacts, displaying causality in a system, revealing sources and rates of emissions, visualizing future scenarios, illustrating potential solutions and exposing uncertainty and unknowns in science. Images function to make this information accessible and sometimes even alluring.

Images are good tools for facilitating quantitative comparison by means of data visualization. Graphics can facilitate comparison creating an understanding of scale for analysis. Images are useful at displaying ecological indicators and greenhouse gas emissions in ways that facilitate comparisons between various sources. For example, Figure 2, *An Atlas of Pollution: The World in Carbon Dioxide Emissions*, displays national levels of carbon emissions. This image enables comparison both between various nations' carbon emissions and the rate at which each nation's emissions are rising or falling in comparison to the previous year.

Images can be powerful means for visualizing future scenarios. For example, in Architecture 2030's image below (Figure 3), the image reveals local impacts due to sea-water rise. This image displays causality in a system and visualizes global changes as having very real impacts for Boston,

San Francisco and other coastal cities. This image displays the consequences of rises in carbon emissions, resulting in planetary energy imbalance sufficient to melt enough ice to raise sea level by several meters – revealing both causality and local impacts.

Images can be useful in communicating what we know in science as well as what we don't know, such as unknowns and uncertainties in science. Images can function to assist the representation of uncertainty in a manner that does justice to the gravity and potential dangers of unintended consequences. Visual theorist Robert Horn describes a role for visual representations of 'unknowns' as a means of reinforcing the precautionary principle. Mapping the gaps in knowledge within environmental science serves to illustrate 'the depth and breadth of our ignorance in this area so as to inform the debate about the precautionary principle' (Horn 2005, p.2). In this fash¬ion images can function to create a greater appreciation for unknown planetary boundaries and ecological thresholds and thereby make risk and uncertainty

Figure 3. ***Nation Under Siege, Sea Level Rise at Our Doorstep, A Coastal Impact Study*****. Prepared by 2030 Inc./Architecture 2030, 2007.**

explicit for policy makers. This work can also help communicate the vital role played by fundamental science in exploring unknown terrain.

Part of the magic of images is that all of the processes above happen almost instantaneously when we see a picture, rather than over a sequence of sentences where communication happens in a more linear and temporal fashion (as in text or oral communication). Visualizing issues of the atmosphere makes environmental processes that are invisible visible. Images reveal socio-political systems that both impact and are impacted by the environment. By enabling communication processes, images facilitate interdisciplinary collaboration in research cultures. In these ways, the visual communication of the environment supports learning, informs analysis and builds capacity for informed decision-making.

References

Cox, R. (2007) Nature's "Crisis Disciplines": Does Environmental Communication Have an Ethical Duty? *Environmental Communication: A Journal of Nature and Culture*, 1(1), May 2007, pp. 5-20.

Diamond, J. (2005) *Collapse*. New York: Penguin.

Horn, R. (2005) What we do not know: Using information murals to portray scientific ignorance. *Futures*, Vol.38, No.3, pp.372-377.

Powell. J.L. (2014) Why Climate Deniers Have No Scientific Credibility: Only 1 of 9,136 Recent Peer-Reviewed Authors Rejects Global Warming. Desmogblog. Wed, 2014-01-08 05:00 Retrieved from: http://www.desmogblog.com/2014/01/08/why-climate-deniers-have-no-scientific-credibility-only-1-9136-study-authors-rejects-global-warming

Oreskes, N. (2004) The Scientific Consensus on Climate Change. *Science*. 3 December 2004: 306 (5702), p.1686.

Integrating air quality and climate mitigation – is there a need for new metrics to support decision making?

Erika von Schneidemesser[1], Julia Schmale[1], John van Aardenne[2]

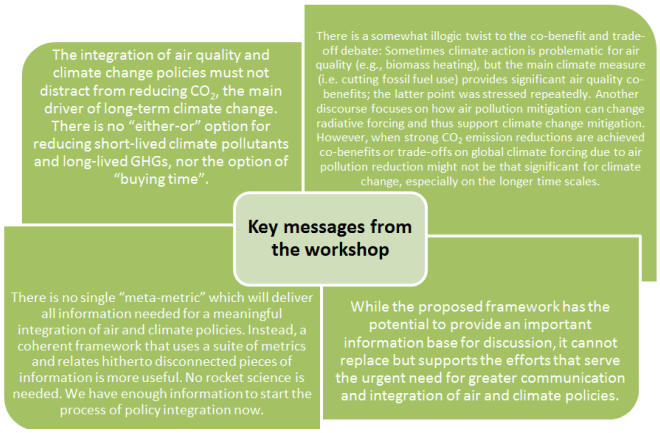
[1] Institute for Advanced Sustainability Studies, Germany, Erika.vonSchneidemesser@iass-potsdam.de, Julia.Schmale@iass-potsdam.de
[2] European Environment Agency, Denmark, jva@eea.europa.eu

Air pollution and climate change are inextricably linked which has also been picked up by the IGAC community (IGBP/IGAC Air Pollution & Climate initiative). However, they are often treated separately in legislation as well as in policy. This situation has developed for understandable reasons, e.g., because air pollution is a more local to regional problem while climate change is a global challenge, but sometimes this leads to incoherent strategies. An example is domestic biomass heating dubbed as a climate friendly option because of its CO_2-neutrality, however, the co-emitted air pollutants, such as black carbon, decrease air quality significantly and also impact climate change.

A workshop was held in October 2013, where about 30 scientific experts and policy makers invited by the Institute for Advanced Sustainability Studies (IASS) and the European Environment Agency (EEA) discussed how the scientific knowledge base on air-climate interactions can be best made available to policy makers and other stakeholders, as well as the needs of decision-makers in this arena. Participants from Europe, Asia and the USA represented climate, atmospheric, and health sciences, environmental agencies, national and regional policy makers, NGOs, and international organizations.

Workshop outcome – Making linkages tangible and providing salient answers

Even though the scientific community has worked on the linkages between air quality and climate change for several years, the climate, public health and ecosystem research communities have each developed a set of very different indicators or metrics. For example, emission metrics such as the global warming potential are very common in climate science while e.g., years of life lost are used to describe health impacts even though both might refer to the emissions of the same source. Given the type information each of these metrics provides on different geographical and temporal scales, the workshop participants concluded that merging the information in one single "meta-metric" would not serve the purpose of making co-benefits and trade-offs visible. Instead, participants proposed to connect the currently disconnected pieces of information by translating available information into a comparable, comprehensive and accessible format to promote integrated thinking on air and climate policy development at various decision-making levels. Such a framework or information portal would be strongly grounded in the suite of available science-based metrics for discussions between scientist and policy makers targeted at maximizing co-benefits and avoiding trade-offs in relation to existing policy targets.



The aim is not to reproduce or replace existing, and sometimes very detailed efforts, such as integrated assessment modeling, but aims to combine the relevant information in such a way as to enable a dialogue about the options that could be implemented and what synergies or trade-offs these measures would have for the different areas. The idea is to make use of the lesson learned especially for guidance at city and local levels that are not always covered by integrated assessments.

By bringing the discussion to a different decision making level of more local users and local action, approaches to jointly consider air pollution and climate change mitigation measures might make its entry into everyday decision-making and long-term planning. To support this process, the EEA and IASS are developing a prototype for such an information portal in collaboration with the various scientific disciplines. For saliency the design will be co-developed with the different communities of end-users.

2013 Gordon Research Conference on Atmospheric Chemistry

28 July – 2 August 2013 • Mt. Snow, Vermont, USA

Steven S. Brown[1]

[1]National Oceanic and Atmospheric Administration, USA, steven.s.brown@noaa.gov

The goal of the 2013 Gordon Research Conference on Atmospheric Chemistry was to bring together scientists working in the laboratory, in the field and on models to provoke discussion towards improving our understanding of the processes that control the composition of the atmosphere. As is traditional for this meeting, it covered multiple themes within the broad field of atmospheric chemistry, with 22 invited talks in 4 ½ days and approximately 140 poster submissions.

The opening session on Atmospheric Chemistry, Climate and Air Quality, led by Jean-Francois Lamarque of the National Center for Atmospheric Research, featured talks by Daniel Jacob (Harvard University), Edward Parson (University of California, Los Angeles), David Fowler (NERC Centre for Ecology and Hydrology), and Tami Bond (University of Illinois). Speakers incorporated themes related to the public policy implications of their research, with Dr. Parson's presentation focused entirely on the interface between science and policy. Similarly, the second session on Energy and Emissions, led by the conference vice chair, Paul Shepson (Purdue University), covered several science and policy related topics, including renewable energy (Mark Jacobson, Stanford University), emissions from the developing U.S. oil and gas sector (Gabrielle Petron, NOAA), and megacity greenhouse gas emissions (Charles Miller, NASA JPL).

The following sessions included Atmosphere Ocean Interactions (led by Kimberly Prather, University of California San Diego), Aerosol Chemistry (led by Allen Robinson, Carnegie Mellon University) and Atmospheric Oxidation (led by James Crawford, NASA Langley). These sessions emphasized new results from recent field and laboratory studies, such as the recent TORERO campaign in the tropical Pacific region (presented by Rainer Volkamer, University of Colorado) and laboratory and field studies of atmospheric aerosol (Alexander Laskin, Pacific Northwest National Laboratory and Christian George, CNRS). Several speakers in this series also emphasized the interface between science and policy, such as the atmospheric impacts of coal transportation in the Pacific Northwest (Daniel Jaffe, University of Washington Bothell), the influence of NO_X reductions on ground level ozone (Ronald Cohen, University of California, Berkeley), and the health effects of aerosols (Jamie Schauer, University of Wisconsin and Ulrich Pöschl, The Max Planck Institute for Chemistry). The topic of the concluding session was Anthropogenic-Biogenic Interactions, with Astrid Kiendler-Schaar (Forschungszentrum Jülich) leading the discussion. Annmarie Carlton (Rutgers University) and Allen Goldstein (University of California, Berkeley) spoke on the feedbacks between liquid water and aerosol chemistry and understanding fluxes of biogenic hydrocarbons.

As is also traditional, the conference was preceded by the twelfth biennial ACCESS (Atmospheric Chemistry Colloquium for Emerging Senior Scientists) colloquium, held at Brookhaven National Laboratory, New York. The ACCESS meeting provides 25 young scientists (typically within 2 years of their Ph.D.) the opportunity to interact with representatives from major funding agencies, and to discuss their research in a series of oral presentations. The chair of the ACCESS meeting this year was Dr. Ernie Lewis of Brookhaven National Laboratory, succeeding the retiring Lenny Newman, who successfully ran ACCESS for many years.

Participants of the 2013 Gordon Research Conference on Atmospheric Chemistry held at Mt. Snow, VT, USA.

IV Colombian Conference and International Meeting on Air Quality and Public Health

13 – 16 August 2013 • Bogota, Colombia

Jorge E. Pachon[1], Nestor Y. Rojas[2]

[1]Universidad de La Salle, Colombia, jpachon@unisalle.edu.co
[2]Universidad Nacional de Colombia, nyrojasr@unal.edu.co

The Colombian Meeting and International Conference on Air Quality and Public Health (CASAP, as per its acronym in Spanish) is the leading event in the country where discussion about air pollution and its impact on public health takes place. Air pollution is associated with large costs to the Colombian economy due to morbidity and mortality outcomes. The conference gathers scholars, researchers and policy makers from across the country in the fields of air quality, public health, climate change, meteorology and energy efficiency, among others. The conference is the best opportunity to know the diversity of air quality issues, the evolution of research that is conducted in the country, the new fields of action and the research and policy perspectives. Discussions held by national and international experts provide ideas for moving towards comprehensive air quality management plans that ensure appropriate air quality conditions for all citizens.

The fourth version of the biennial conference took place in Bogotá on August 13-16, 2013 gathering 460 attendees (52% students and 48% professionals) and 120 accepted abstracts in the form of oral presentations and posters. Abstracts were submitted by research groups and institutions from most of the regions of Colombia and from other countries. It was possible to observe a significant increase in the number of papers with respect to the 3 previous conferences, demonstrating the growing concern for air pollution issues and the growing capacity of research groups and institutions. In particular, researchers in Colombia are interested in characterizing the nature of pollutants in the atmosphere and assess their impact on public health.

Keynote speakers of this fourth version were Luisa Molina from the Molina Center for Energy and the Environment, Andreas Mayer from "TTM Technik Thermische Maschinen," Nga Lee (Sally) Ng researcher of the Georgia Institute of Technology, Saulo Freitas from INPE, Brazil, Bhola R. Gurjar from the Indian Institute of Technology at Roorkee, Ferran Ballester from the Department of Health and Environment of the Center for Research in Public Health in Spain and Larens Ganzeveld from Wageningen University and Research Centre. Some of these experts participate actively in the IGAC project and the IGAC Americas Working Group.

The conference was also an opportunity to identify weaknesses and strengths in the field of air quality in Colombia. Technically, there is significant room for improvement in air quality monitoring, in estimating emission inventories and, particularly, in meteorological and air quality modeling. It is recognized that there is a growing mass of highly-trained professionals in universities and research groups, but unfortunately results from scientific research are not fully utilized to support policy making. Finally, the lack of articulation between different actors involved in air quality management needs to be solved to achieve better air quality in Colombian cities and regions.

Participants of the IV Colombian Conference and International Meeting on Air Quality and Public Health held in Bogota, Colombia.

community

Join the IGAC Community
Don't forget to join the IGAC community to stay apprised of the most current news on conferences, workshops and publications, as well as receive our newsletters by email.

IGAC Project Offices

International Project Office
University of Colorado, CIRES
Boulder, CO USA
Megan L. Melamed
IGAC Executive Officer
megan@igacproject.org

European Project Office
Italian National Research Council, Institute of Atmospheric Sciences and Climate
Bologna, Italy
Francesca Pollini
igac.bologna@isac.cnr.it

IGAC SSC Members

Paul S. Monks (Co-Chair)
University of Leicester
Department of Chemistry
Leicester, U.K.
P.S.Monks@leicester.ac.uk

Allen Goldstein (Co-Chair)
University of California, Berkeley
Department of Environmental Science, Policy, and Management
Berkeley, California, USA
ahg@berkeley.edu

Jonathan Abbatt
University of Toronto
Department of Chemistry
Toronto, ON Canada
jabbatt@chem.utoronto.ca

Mary Barth
NCAR
Earth System Laboratory
Boulder, Colorado, USA
barthm@ucar.edu

Claire Granier
LATMOS-IPSL
Paris, France
NOAA/ERSL & CU/CIRES
Boulder, CO USA
Max Plank Institute
Hamburg, Germany
Claire.Granier@latmos.ipsl.fr

Colette Heald
Massachusetts Institute of Technology
Department of Civil and Environmental Engineering
Boston, Massachusetts, USA
heald@mit.edu

Judith Hoelzemann
UFRN
Natal, Brazil
judith.hoelzemann@ect.ufrn.br

Melita Keywood
CSIRO and Bureau of Meteorology
Centre for Australian Weather and Climate Research
Melbourne, Australia
Melita.Keywood@csiro.au

Mark Lawrence
Institute for Advanced Sustainability Studies (IASS)
Sustainable Interactions with the Atmosphere
Potsdam, Germany
mark.lawrence@iass-potsdam.de

Shih-Chun Candice Lung
Academia Sinica
Research Center for Environmental Changes
Taipei, Taiwan
sclung@rcec.sinica.edu.tw

Olga Mayol-Bracero
University of Puerto Rico
Institute for Tropical Ecosystem Studies
Rio Piedras, Puerto Rico
omayol@ites.upr.edu

Spyros Pandis
University of Patras
Patras, Greece
Carnegie Mellon University
Pittsburgh, PA USA
spyros@chemeng.upatras.gr

Rokjin Park
Seoul National University
School of Earth and Environmental Sciences
Seoul, South Korea
rjpark@snu.ac.kr

Yinon Rudich
Weizmann Institute
Department of Environmental Sciences
Rehovt, Israel
Yinon.Rudich@weizmann.ac.il

Chhemendra Sharma
National Physical Laboratory
Radio and Atmospheric Sciences Division
New Delhi, India
csharma@mail.nplindia.ernet.in

Hiroshi Tanimoto
National Institute for Environmental Studies
Center for Global Environmental Research
Tsukuba, Ibaraki Japan
tanimoto@nies.go.jp

Tao Wang
Hong Kong Polytechnic University
Department of Civil and Environmental Engineering
Hong Kong, China
cetwang@polyu.edu.hk

Noureddine Yassaa
CDER
Algiers, Algeria
n.yassaa@cder.dz

calendar

April

IBBI Workshop 2014
23 - 25 April 2014
Schloss Ringberg, Germany

May

MOZAIC-IAGOS Scientific Symposium on Atmospheric Composition Observations by Commercial Aircraft: 20th Anniversary
12 – 15 May 2014
Toulouse, France

4th iLEAPS Science Conference
12 – 16 May 2014
Nanjing, China

Adaptation Futures 2014
12 – 16 May 2014
Ceara, Brazil

CCMI Workshop 2014
20 - 22 May 2014
Lancaster, UK

June

DUST 2014
1 – 6 June 2014
Castellaneta Marina (TA), Italy

Goldschmidt Conference 2014
10 – 11 June 2014
Sacramento, CA, USA

16th GEIA Conference
10 – 11 June 2014
Boulder, CO, USA

ACCENT-Plus Summer School: Atmospheric Composition Change: Drivers, Feedbacks and Impacts in Air Quality and Climate
22 – 29 June 2014
Urbino, Italy

2014 Gordon Research Conference - Biogenic Hydrocarbons & the Atmosphere: Interactions in a Changing World
29 June – 4 July 2014
Girona – Costa Brava, Spain

July

Asia Oceania Geosciences Society (AOGS) 11th Annual Meeting
28 July – 1 July 2014
Sapporo, Japan

Italics: IGAC Sponsored Event

Visit igacproject.org for updates to the calendar

13th Quadrennial iCACGP Symposium
13th IGAC Science Conference
on Atmospheric Chemistry
BRAZIL NATAL 2014
22-26 September
Changing Chemistry in a Changing World

13th Quadrennial iCACGP Symposium 13th IGAC Science Conference on Atmospheric Chemistry

Scientific Topics

1. Atmosphere-surface (ocean/vegetation/ice) interactions in a changing climate
2. Atmospheric chemistry and the coupling between biogenic and anthropogenic emissions
3. Interactions between aerosols, clouds and precipitation
4. Atmospheric chemistry and urbanization: from local to the global scales
5. Atmospheric chemistry fundamentals
6. Atmospheric chemistry in a changing climate

Confirmed Keynote Speakers

Paulo Artaxo, University of São Paulo, Brazil
A.R. Ravishankara, Colorado State University, USA
Jos Lelievled, Max Planck Inst. f. Chemistry, Germany

Confirmed Invited Speakers

Lucy Carpenter, University of York, UK
Thomas Karl, University of Innsbruck, Austria
Scot Martin, Harvard University, USA
Annmarie Carlton, Rutgers University, USA
Ilan Koren, Weizmann Institute, Israel
Akua Asa-Awuku, University of California Riverside, USA
Tong Zhu, Peking University, China
Michael Gauss, Meteorological Institute, Norway
Jason Surratt, University of N. Carolina, USA
Carl Percival, University of Manchester, UK
Jason West, University of N. Carolina, USA
Paul Young, Lancaster University, UK

Abstract Submission Deadline: March 15, 2014

Sponsors

Support

Organization

www.igac-icacgp2014.org