

# The Third Workshop on Atmospheric Composition and the Asian Monsoon (ACAM) and the Second ACAM Training School

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## DATES:

Workshop: 5-9 June 2017

Training School: 10-12 June 2017

## ORGANISERS:

*Scientific Organising Committee:*

Laura Pann, Jim Crawford, Michelle Santee, Hiroshi Tanimoto, Arnico Panday, Vinayak Sinha, Gabi Stiller, Jessica Neu, Chiara Cagnazzo, Mian Chin, Hans Schlager, Jianchun Bian, Mary Barth, Ritesh Gautam, Federico Fierli

*Local Organising Committee:*

Xuemei Wang, Jianchun Bian, Song Yang, Qi Fan, Jason Cohen, Hong Liao, Shaw Liu, Boguang Wang, Junyu Zheng, Sachiko Hayashida, Masatomo Fujiwara, Prabir Patra, Rokjin Park, Suresh Babu, Suvarna Fadnavis, and Manish Naja, Maheswar Rupakheti, Bhupesh Adhikary, Faheem Khokhar, Abdus Salam, Narisara Thongboonchoo, Kim Oanh, Mohd Talib Latif, Puji Lestari

## HOST INSTITUTION:

Jinan University, Guangzhou, China

**NUMBER OF PARTICIPANTS:** 160

## SPONSORS:



Following the first and second workshops in 2013 (Kathmandu, Nepal) and 2015 (Bangkok, Thailand), the ACAM community recently held its third workshop at Jinan University in Guangzhou, China, from 5-9 June 2017. The participants included 160 scientists from 18 different countries (**Figure 18**). The scientific discussion spanned issues ranging from ground-level air quality to upper atmospheric composition in the Asian monsoon region. The region is unique given the interaction between the monsoon meteorology and emissions from human activity where population and economic development are undergoing rapid change. These interactions have important local implications in terms of the coupling between pollution and monsoon changes and their impacts on human health and the regional economy. The interactions are also of global significance, since monsoon convection serves as an effective conduit for pollution to reach the upper atmosphere with potential impacts on climate and stratospheric ozone.

The scientific scope of the workshop followed the four ACAM scientific themes, each representing a key aspect of the connection between atmospheric composition and Asian monsoon dynamics:

1. Emissions and air quality in the Asian monsoon region. This theme spans all seasons, recognising issues ranging from summertime photochemical smog to winter pollution episodes.
2. Aerosols, clouds, and their interactions with the Asian monsoon. This theme recognises the dominant impact of aerosols on this region and the continuing exploration of evidence for feedbacks influencing the monsoon climate system.
3. Impact of monsoon convection on chemistry. This theme focuses on the vertical redistribution of anthropogenic and natural emissions, expanding the impact of Asian emissions on atmospheric chemistry globally.
4. Upper troposphere/lower stratosphere (UTLS) Response to the Asian Monsoon. This theme emphasises the intersection between Asian emissions and the monsoon anticyclone circulation as a conduit for increased anthropogenic influence on the UTLS environment.

## SPONSORS:



PICARRO

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International Association of Meteorology  
and Atmospheric Sciences

## BACKGROUND:

ACAM is a joint SPARC/IGAC activity that focuses on the connection between atmospheric composition and Asian monsoon dynamics. These interactions have important local implications and global impacts. The third ACAM workshop spanned issues ranging from ground-level air quality to upper atmospheric composition in the Asian monsoon region.

## ACTIVITY WEBSITES:

[www.sparc-climate.org/activities/asian-monsoon](http://www.sparc-climate.org/activities/asian-monsoon)

[www2.acom.ucar.edu/acam](http://www2.acom.ucar.edu/acam)

Following the four themes, the attendees presented 80 talks and 50 posters on recent science results, as well as current and future plans for field observations in the region. Discussion sessions were devoted to a number of collaboration topics including data sharing, participation in community modelling efforts, coordination of field observations, and capacity building through training and mentoring of young scientists. Most of the presentations are posted on the third ACAM workshop page: [www2.acom.ucar.edu/acam/guangzhou-2017-agenda](http://www2.acom.ucar.edu/acam/guangzhou-2017-agenda)

Following the workshop, ACAM held its second training school on 'Observations and Modelling of Atmospheric Chemistry and Aerosols in the Asian Monsoon' from 10-12 June at Jinan University. Specific goals of the training school were (1) to provide training for early career scientists on topics relevant to studying trace gases and aerosols in Asia, particularly in connection with the Asian monsoon; (2) to create a network of ACAM early career scientists; and (3) to provide resources for improving their science and communication skills. This event was the second in the series of training activities organised as part of the ACAM working group on capacity building, with the previous one conducted at the Asian Institute of Technology, Bangkok, Thailand, in June 2015.

Over 40 students and nine lecturers participated in the training school, representing seven Asian countries and three European countries, with over one third female participants. Participants were either current students (primarily graduate students) or early career researchers within three years of receiving their PhD, with interest in learning about observations and modelling tools for applications to ACAM research.

Lecturers at the school presented various topics including theoretical and practical information on their particular area of expertise. Lectures ranged from satellite remote sensing and aircraft observations, to global and regional modelling, but the main focus was on trace gases, aerosols, transport processes, and air-sea interactions in the Asian monsoon region. **Tianjun Zhou** presented two overview lectures on the Asian monsoon, associated air-sea interactions, and the role of anthropogenic forcings on Asian monsoon circulation patterns and rainfall variability in the region. **Jessica Neu** and **Ritesh Gautam** discussed satellite measurements and retrieval techniques for atmospheric composition measurements, while **Elliot Atlas** and **Sachin Ghude** presented methods used for sampling trace gases from aircraft and with ground-based instruments. **Chiara Cagnazzo**, **Federico Fierli**, **Mian Chin**, and **Mary Barth** discussed global and regional scale modelling, transport processes, and analysis of trace gases and aerosols in relation to the Asian region. Sachin Ghude also discussed emission inventories and their evaluation.

A highlight of the school was the "Science and Communication



**Figure 19:** Participants of the third ACAM workshop held at Jinan University, Guanzhou, China, from 5-9 June 2017.

Café”, in which three major topics were addressed. The first was a discussion and exercise on communicating science to the general public in the form of a press release. Participants were exposed to methods for effectively translating research findings into non-technical and jargon-free language. The second topic discussed the significance of organisation of slides for oral presentations, for instance highlighting the logical balance between size, colours of text/figures, and the importance of ending a presentation with a summary/conclusion slide. The third topic was an exercise on creating a “science elevator speech”- a clear, brief message about a research finding and its broad significance in just a few minutes (akin to the time it takes for people to ride in an elevator from the bottom to the top of a building). These were all interactive exercises with group presentations of press releases by the participants.

Other hands-on activities included group tasks to propose an aircraft field campaign based on a topic relevant to ACAM, with the students determining the type of instruments needed to address the objectives of the field campaign, and the modelling framework to forecast and analyse the field campaign data. These hands-on activities created a collegial camaraderie among the participants and lecturers. The participants were enthusiastic about the “Science and Communications Café” as well as the hands-on activities, suggesting that more time be spent on these practical exercises. However, they also enjoyed the more theoretical lectures, which

broadened their knowledge on various aspects related to observations and modelling.

The lectures have been posted on the ACAM 2nd Training School website: [www2.acom.ucar.edu/acam/guangzhou-2017-training-school](http://www2.acom.ucar.edu/acam/guangzhou-2017-training-school). Information about other training schools and resources in relation to ACAM are also available from the same website.

The workshop and training school were made possible by generous sponsorship from the following organisations that provided for meeting facilities and expenses, as well as travel support for 55 of the meeting attendees: China Association for Science and Technology (CAST), Chinese Academy of Sciences (CAS), Key Laboratory of Middle Atmosphere and Global Environment Observation (LAGEO), Nanjing University of Information Science and Technology (NUIST), Jinan University, International Commission on Atmospheric Chemistry and Global Pollution (iCACGP), Stratosphere-troposphere Processes And their Role in Climate (SPARC), International Global Atmospheric Chemistry project (IGAC), International Centre for Integrated Mountain Development (ICIMOD), Forschungszentrum Jülich, National Center for Atmospheric Research (NCAR), National Aeronautics and Space Administration (NASA), and Picarro Inc. Both the workshop and training school significantly benefited from the outstanding support of the local student volunteers at Jinan University.

