

Atmospheric Chemistry over Southern Africa

Changing Chemistry in a Changing Climate: Human and Natural Impacts over the Southern Africa Region (C4-SAR);

Midrand, South Africa, 31 May – 3 June 2011

During the southern African dry season, regional haze from mixed industrial pollution, biomass burning aerosol and gases from domestic and grassland fires, and biogenic sources from plants and soils is worsened by a semi-permanent atmosphere gyre over the subcontinent. These factors were a driver of several major international field campaigns in the 1990s and early 2000s, and attracted many scientists to the region. Some researchers were interested in understanding fundamental processes governing chemistry of the atmosphere and interaction with climate change. Others found favorable conditions for evaluating satellite-derived measurements of atmospheric properties and a changing land surface. With that background in mind a workshop on atmospheric chemistry was held in South Africa. Sponsored by the International Commission for Atmospheric Chemistry and Global Pollution (ICACGP; <http://www.icacgp.org/>), the workshop received generous support from the South African power utility, Eskom, and the Climatology Research Group of the University of the Witwatersrand, Johannesburg, South Africa.

The purpose of the workshop was to review some earlier findings as well as more recent findings on southern African climate vulnerability, chemical changes due to urbanization, land-use modification, and how these factors interact. Originally proposed by John Burrows, president of ICACGP, the workshop was the first ICACGP regional workshop to study the interaction of air pollution with global chemical and climate change. Organized locally by the University of the Witwatersrand, the workshop attracted more than 60 delegates from South Africa, Mozambique, Botswana, Zimbabwe, France, Germany, Canada, and the United States.

More than 30 presentations were given, exploring both retrospective and prospective aspects of the science. In several talks, attention was focused on southern African chemistry, atmospheric pollution monitoring, and climate processes as they were studied in the field campaigns such as Transport and Atmospheric Chemistry Near the Equator—Atlantic (TRACE-A), Southern African Fire-Atmosphere Research Initiative (SAFARI-92), and Southern African Regional Science Initiative (SAFARI 2000). Since those large international efforts, satellites have matured enough to enable quantifiable measurements of regional land surface, atmosphere, and ocean. In addition, global and chemical transport models have also been advanced to incorporate various data. Thus, the timing of the workshop was right for a full-fledged re-assessment of the chemistry, physics, and socio-economical impacts caused by pollution in the region, including a characterization of sources, deposition, and feedbacks with climate change.

The participation of local scientists, many of whom were students during the SAFARI field campaigns, was exemplary. The group is not only shaping policy, but has raised the level of climate research in the region by improving observations, modeling, computational capability, and, importantly, education of the next generation of climate scientists.

The workshop concluded by proposing two followup activities. The first is to produce a book that reviews important advances in chemistry and climate changes in southern Africa over the past

fifteen years. The second is to plant seeds for an international field campaign in the region to take place after 2013.

A photo and list of the participants can be found in the online supplement to this meeting report (http://www.agu.org/eos_elec).

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