Geophysical Research Abstracts
Vol. 16, EGU2014-8879, 2014
EGU General Assembly 2014

The DACCIWA Project: Dynamics-Aerosol-Chemistry-Cloud interactions in West Africa

Peter Knippertz and the DACCIWA Team

Institute for Meteorology and Climate Research, Karlsruhe Institute of Technology, Karlsruhe, Germany (peter.knippertz@kit.edu)

Massive economic and population growth and urbanisation are expected to lead to a tripling of anthropogenic emissions from southern West Africa (SWA) between 2000 and 2030, the impacts of which on human health, ecosystems, food security and the regional climate are largely unknown. An assessment of these impacts is complicated by (a) a superposition with effects of global climate change, (b) the strong dependence of SWA on the sensitive West African monsoon, (c) incomplete scientific understanding of interactions between emissions, clouds, radiation, precipitation and regional circulations and (d) by a lack of observations to advance our understanding and improve predictions.

The purpose of this contribution is to introduce the research consortium DACCIWA (Dynamics-Aerosol-Chemistry-Cloud interactions in West Africa), which comprises 16 partners in six European and West African countries. The interdisciplinary DACCIWA team will build on the scientific and logistical foundations established by the African Monsoon Multidisciplinary Analysis (AMMA) project and collaborate closely with operational centres. DACCIWA will receive funding of about M8.75€ from the European Commission as part of Framework Programme 7 from 2015 until 2018.

The DACCIWA project will conduct extensive fieldwork in SWA to collect high-quality observations, spanning the entire process chain from surface-based natural and anthropogenic emissions to impacts on health, ecosystems and climate. This will include a major field campaign in summer 2015 with three research aircrafts and two ground-based supersites. Combining the resulting benchmark dataset with a wide range of modelling activities will allow us: (a) to assess all relevant physical and chemical processes, (b) to improve the monitoring of climate and compositional parameters from space, (c) to determine health impacts from air pollution, and (d) to develop the next generation of weather and climate models capable of representing coupled cloud-aerosol interactions, which will ultimately lead to reduced uncertainties in climate predictions.

SWA with its rich mix of emissions and diverse clouds is ideal for such a study and many findings and technical developments will be applicable to other monsoon regions. Using a targeted dissemination strategy, DACCIWA will deliver a comprehensive scientific assessment and actively guide sustainable future planning and policy-making for West Africa and beyond.