



The DACCIWA model evaluation project: representation of the meteorology of southern West Africa in state-of-the-art weather, seasonal and climate prediction models

Anke Kniffka (1), Angela Benedetti (2), Peter Knippertz (1), Tanja Stanelle (3), Malcolm Brooks (4), Konrad Deetz (1), Marlon Maranan (1), Philip Rosenberg (5), Gregor Pante (1), Richard Allan (6), Peter Hill (6), Bianca Adler (1), Andreas Fink (1), Norbert Kalthoff (1), Christine Chiu (6), Bernhard Vogel (1), Paul Field (4), and John Marsham (5)

(1) Karlsruhe Institute of Technology, Institute for Meteorology and Climate Research, Karlsruhe, Germany (anke.kniffka@kit.edu), (2) European Centre for Medium-Range Weather Forecasts, Reading, UK, (3) Eidgenössische Technische Hochschule Zürich, Institute for Atmospheric and Climate Science, Zürich, Switzerland, (4) Met Office, Exeter, United Kingdom, (5) University of Leeds, School of Earth and Environment, Leeds, United Kingdom, (6) University of Reading, Department of Meteorology, Reading, United Kingdom

DACCIWA (Dynamics-Aerosol-Chemistry-Cloud Interactions in West Africa) is an EU-funded project that aims to determine the influence of anthropogenic and natural emissions on the atmospheric composition, air quality, weather and climate over southern West Africa. DACCIWA organised a major international field campaign in June-July 2016 and involves a wide range of modelling activities. Here we report about the coordinated model evaluation performed in the framework of DACCIWA focusing on meteorological fields. This activity consists of two elements: (a) the quality of numerical weather prediction during the field campaign, (b) the ability of seasonal and climate models to represent the mean state and its variability.

For the first element, the extensive observations from the main field campaign in West Africa in June-July 2016 (ground supersites, radiosondes, aircraft measurements) will be combined with conventional data (synoptic stations, satellites data from various sensors) to evaluate models against. The forecasts include operational products from centres such as the ECMWF, UK MetOffice and the German Weather Service and runs specifically conducted for the planning and the post-analysis of the field campaign using higher resolutions (e.g., WRF, COSMO). The forecast and the observations are analysed in a concerted way to assess the ability of the models to represent the southern West African weather systems and secondly to provide a comprehensive synoptic overview of the state of the atmosphere.

In a second step the process will be extended to long-term modelling periods. This includes both seasonal and climate models, respectively. In this case, the observational dataset contains long-term satellite observations and station data, some of which were digitised from written records in the framework of DACCIWA. Parameter choice and spatial averaging will build directly on the weather forecasting evaluation to allow an assessment of the impact of short-term errors on long-term simulations.