



The DACCIWA 2016 radiosonde campaign in southern West Africa

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Operational upper-air stations are very sparsely distributed over West Africa, resulting in the necessity to enhance radiosonde observations for the DACCIWA (Dynamics-Aerosol-Chemistry-Cloud Interactions in West Africa) experimental period during June-July 2016. Building on the AMMA (African Monsoon – Multidisciplinary Analyses) experience, existing infrastructures, as well as human networks, the upper air network was successfully augmented to a spatial density that is unprecedented for southern West Africa. Altogether, more than 750 experimental radiosondes were launched at seven stations in three countries along the Guinea Coast.

From its outset, the DACCIWA radiosonde campaign had three pillars: (a) enhancing soundings at operational or quiescent AMMA radiosonde stations; (b) launching sondes at DACCIWA supersites and two additional DACCIWA field sites; and (c) collecting standard and – if possible – high-resolution data from other operational RS stations. In terms of (a), it was found during preparing recce visits to West Africa, that the AMMA-activated stations of Cotonou (Benin) and Abuja (Nigeria) were operational though almost “invisible” on the World Meteorological Organisation’s Global Teleconnection System (GTS). These and other AMMA legacies facilitated the implementation of enhanced, four-times daily soundings at Abidjan (Ivory Coast), Cotonou and Parakou (both Benin). Two well-instrumented DACCIWA ground sites at Kumasi (Ghana) and Savé (Benin) performed 06 UTC soundings, being enhanced to four-times daily ascents during fifteen Intensive Observing Periods (IOPs). In addition, research staff and students from the Karlsruhe Institute of Technology (KIT) and African partners conducted up to five-times daily soundings at Lamto (Ivory Coast) and Accra (Ghana). Almost all of the experimental DACCIWA ascents were submitted to the GTS in real time and assimilated at least at three European numerical weather prediction centres that helped to improve their operational analysis over southern West Africa during June-July 2016. In addition, upper-air data from the Nigerian stations Lagos, Abuja and Kano, not available in international archives, were collected and fed into the DACCIWA database.

Instrumental to the success of the DACCIWA radiosonde campaign under challenging logistical constraints was the excellent collaboration and commitment of various African partners. In addition, European and African students worked together in the field to ensure an uninterrupted sounding frequency. The present contribution will describe the network, aspects of the Africa-European team working, the available data and their accessibility for research, as well as some first applications and highlights.