Project: **945** Project title: **SASSCAL** Project lead: **Andreas Haensler** Report period: **1.1.2015 - 31.12.2015**

A profound and robust data base of quality controlled high-resolution climate projections has to be established to be able to estimate the potential impacts of future climate change on the water resources, agriculture, forestry and human livelihoods over the SASSCAL region. Therefore already existing high-resolution climate change projections have to be identified and analyzed as an initial activity. But also the design and realization of new high-resolution climate change projections over the region has to be implemented in the process, as the rapid development in computational capacity also allows that more and more processes affecting the climate system are included in the projections. The resulting ensemble of high-resolution climate projections might serve as the basis for an assessment to quantify the degree of robust climate change in contrast to climate variability and inherit model uncertainty. Such an analysis can be a first step towards the identification of the probability of a given climate change signal. In this proposal focus is given on the expansion of the data base of quality controlled high-resolution climate change projections over the SASSCAL region. Furthermore, large emphasis is given to knowledge transfer and capacity building to facilitate the research institutions of the SASSCAL region in analyzing existing observations and climate change projections, running regional modelling systems and assessing the possible future scenarios and associated uncertainties.

The Climate Service Center Germany is leading the workpackage 2, task 006 ("Expanding the database for a robust regional climate change assessment and uncertainty analysis") of SASSCAL funded by the BMBF. For a regional climate change assessment, a sufficiently large set of projections from several regional climate models (RCMs) and different emission scenarios is necessary. Additionally, global climate projections as forcing for regional climate models have to encompass a considerable number of various general circulation models (GCMs).

In the reporting period, two transient regional climate change projections using REMO forced with IPSL-CM5A-LR RCP2.6 and RCP8.5 data were simulated successfully for the period 1949 to 2100 and the quality check of these simulations has begun. For the BCC-CSM1 model, there is no 6-hourly level data available which can be used as forcing for the regional climate model REMO. Therefore, the BCC-CSM1 model was replaced by the HadGEM2-ES model. The regional climate projection forced with HadGEM2-ES RCP2.6 is currently running and will be finished until the end of this year. The preparation of the CSIRO-Mk3-6-0 RCP2.6 forcing data for the regional climate projection could not be started yet since the promised data delivery from the CSIR in Pretoria has not arrived. Because of the fact, that the pre-processing of the forcing data takes a lot of time, this regional climate change projection can not be finished until the end of this year.