

Project: **706**

Project title: **The future Okavango: Scientific support for sustainable land and resource management in the Okavango basin**

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Report period: **1.1.2014 - 31.12.2015**

TFO is a BMBF funded research project, coordinated by Prof. Norbert Jürgens, University of Hamburg. TFO is funded for the period from 2010 to 2015. This research project focuses on the Okavango basin with its variety of savannah woodland and wetland ecosystems linked by the central lifeline of the Okavango River. The region is a global hot-spot of accelerating change and land use conflicts and this study will link high-level inter- and trans-disciplinary research with trans-boundary stakeholder and land user requirements. The basin comprises different aspects of the Okavango River as it flows through the highly disturbed war ridden areas of Angola, and through the semi-arid areas of Namibia and Botswana. In Botswana it terminates in the Okavango delta, the world largest inland delta and the largest freshwater swamp south of the equator. The Okavango basin is proposed here as a trans-boundary study region of high international visibility and high potential transferability of results to other tropical and sub-tropical regions.

The Climate Service Center Germany is leading the Subproject 1 ("Climate Change in the Okavango region") of the TFO project, in which present and future climate conditions will be analysed in the Okavango basin under different climate change scenarios and climate change data including uncertainty information will be provided to the other subprojects. The data will include information on all components of the hydrological cycle (precipitation, evaporation, soil moisture, surface runoff) as well as other meteorological variables (temperature, radiation, wind, etc.). The regional climate models (RCMs) REMO and WRF will be extensively validated and if needed adjusted for the region and used with boundary conditions from ECMWF Re-analyses (ERA40 and ERA-INTERIM data) and the two different global climate models (GCMs) ECHAM6 and EC-EARTH. In addition, studies will be carried out to strengthen the understanding of the processes determining the climate of the Okavango region. These studies concentrate on remote influences as the moisture transport into the Okavango region. The thorough understanding of these processes allows for a substantiated evaluation and interpretation of the projected climate changes.

In the accounting period from 01.01.2014-31.12.2015, we tried to finish the two different climate change scenarios (RCP 4.5 and RCP 8.5) using WRF forced by ECHAM6 double-nested (0.44 to 0.22 degree). Due to technical problems in the setup of the regional climate projections with the WRF model which leads to errors in the results, these simulations could not be used for the project. Furthermore, we did some sensitivity tests with a new five-soil-moisture scheme implemented in REMO for the CORDEX-Africa domain. The analysis of these simulations is ongoing and first results seem to be reasonable.