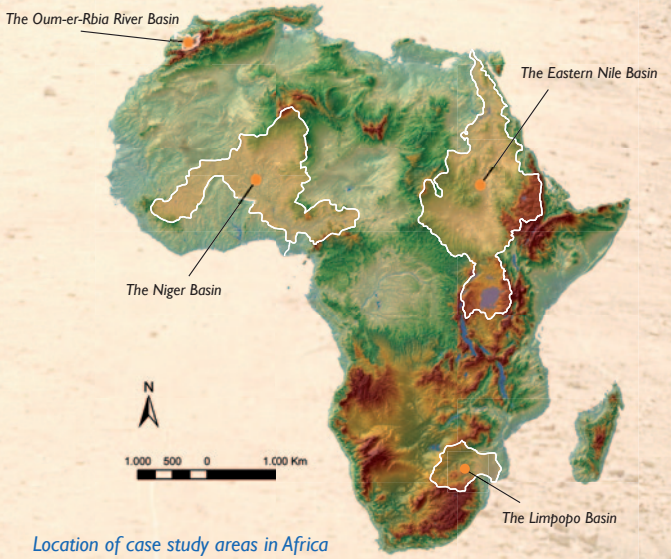
Case studies

- The Eastern Nile Basin (North & Eastern Africa), focussing on improved tools for the forecasting of water availability, the impact of climate change and community scale adaptation.
- The Limpopo Basin (Southern Africa), focussing on improving existing drought monitoring and forecasting capabilities, as well as institutions, policies, guidelines and procedures for management of the scarce water resources in the basin.
- The Oum-er-Rbia River Basin (Morocco, Northern Africa), focussing on improving capabilities in the forecasting of agricultural drought and establishing guidelines on adaptation in agricultural practices to reduce vulnerability.
- The Niger Basin (Western Africa), focussing on mid-term climate forecasting and strengthening preparedness to droughts to improve food security and human welfare.
- A pan-African case study, focussing on the development of a pre-operational drought forecasting system, and improving current drought and food security predictions across the continent.
- A case study focussing on the inter-comparison of approaches applied in the case studies of the DEWFORA project, and those applied in other EU projects, particularly in Southern Europe.



Location of case study areas in Africa

Project Partners

- Deltares (coordinator) | *Netherlands*
- Council for Scientific and Industrial Research | *South Africa*
- Dinder Center for Environmental Research | *Sudan*
- European Centre for Medium-range Weather Forecasts | *Europe*
- German Research Centre for Geosciences | *Germany*
- Hydraulic Research Institute - Nile Basin Capacity Building Network for River Engineering | *Egypt*
- Joint Research Centre | *Europe*
- Mediterranean Agronomic Institute of Zaragoza | *Spain*
- IGAD Climate Prediction and Applications Centre | *Kenya*
- Nile Forecast Center | *Egypt*
- Potsdam Institute for Climate Impact Research | *Germany*
- Institut Agronomique et Vétérinaire Hassan II | *Morocco*
- UNESCO-IHE Institute for Water Education | *Netherlands*
- Universidad Politecnica de Madrid | *Spain*
- University Eduardo Mondlane, Faculty of Engineering | *Mozambique*
- University of Porto, Faculty of Engineering | *Portugal*
- WR Nyabeze & Associates | *South Africa*
- WaterNet Trust | *Botswana*
- Wetlands International – Sahelian Sub Regional Office | *Mali*

Contact details

For more information on the DEWFORA project and activities, please contact:

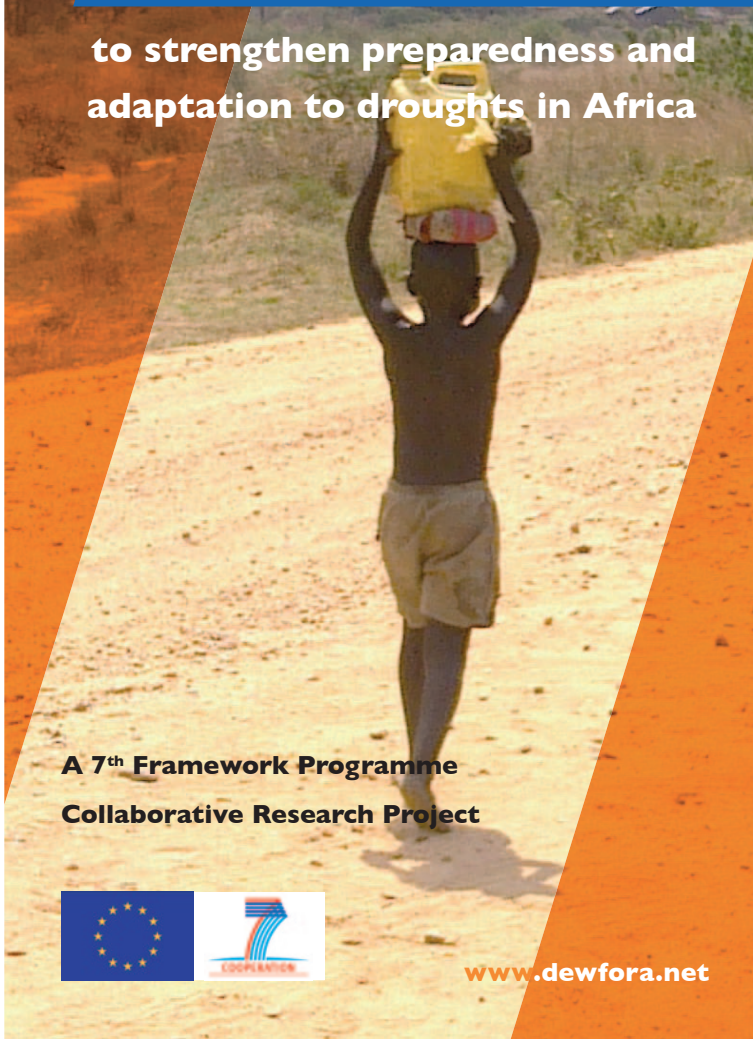
Dr. Micha Werner *(DEWFORA – project coordinator)*
e-mail micha.werner@deltares.nl
phone +31 (0)88 335 82 07
fax +31 (0)88 335 85 82

www.dewfora.net

DEWFORA

Improved Drought Early Warning and FORecasting

to strengthen preparedness and adaptation to droughts in Africa



A 7th Framework Programme

Collaborative Research Project

www.dewfora.net

Summary

Drought is one of the major natural hazards in many parts of the world, including Africa and some regions in Europe, and drought events have resulted in extensive damage to livelihoods, environment and economy. Recent predictions on climate change suggest this situation may worsen, projecting an increased frequency and severity of drought in many areas. Effective drought risk management, including the provision of advance warning and the implementation of effective mitigation in response to drought, however, offers the potential to reduce the adverse impacts. Preparedness and education can increase resilience of affected societies, allowing them to cope better with drought and its impacts, and help break the disaster-response cycle.

The principal aim of DEWFORA is to develop a framework for the provision of early warning and response through drought impact mitigation for Africa. This framework will cover the whole chain from monitoring and vulnerability assessment, to forecasting, warning, response and knowledge dissemination.

The project has been designed to achieve four key targets:

- *Assessing existing capacities* in Africa in terms of drought monitoring, forecasting and warning, enhancing *drought monitoring* methods through *improved indicators* and understanding the relationship between drought hazard and vulnerability in the current climate and how this will change as a result of *climate change*.
- *Improving performance* of methods used for *forecasting droughts* in Africa by implementing state-of-the-art in (seasonal) meteorological, hydrological and agricultural forecasting.
- *Improving early warning* of droughts through appropriate *thresholds* for initiation of mitigation activities, and establishing *strategies* to increase resilience to drought at seasonal and longer time scales.
- *Transferring knowledge* to practitioners and *building capacity* in Africa to ensure that knowledge developed continues to be exploited beyond the project.

www.dewfora.net

A driving concept in the DEWFORA project is to bring the state-of-the-art in drought forecasting and warning into the operational domain. The project will focus on a case-study approach, with the methods developed being applied in four basins, distributed across different climate zones in Africa. Additionally, operational forecasting on the pan-African scale will be piloted to the pre-operational level, using recent advances in meteorological and hydrological modelling.

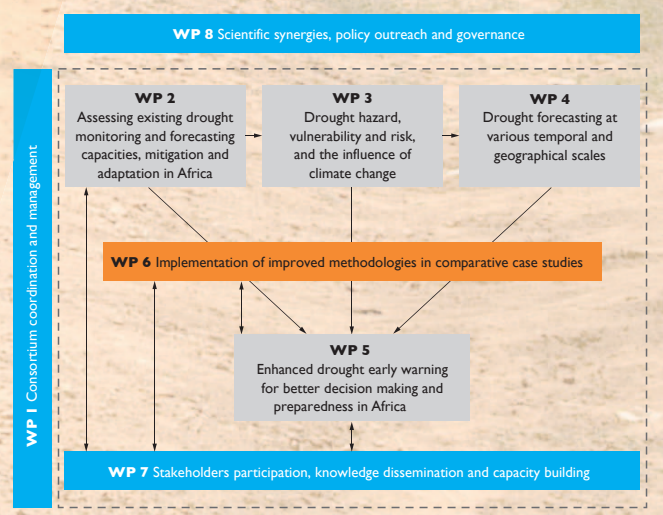
Scientific synergies and outreach

DEWFORA was launched in January 2011, and will span a 3-year period. Information and news from the project can be found on the project website (www.dewfora.net), including scientific publications, guidelines and science-policy briefs. DEWFORA will target dissemination of advances made through a stakeholders platform that includes national and regional drought monitoring and forecasting agencies, as well as through capacity building programmes to help embed the knowledge gained in the community of African practitioners and researchers. The DEWFORA project will form a research cluster with several other independent EU research projects, including AFROMAISON and EAU4FOOD that address related topics of water resources, agriculture and food security in Africa, as well as WASSERmed, CLIMB, and CLICO that focus on these topics predominantly within Southern Europe. Such collaboration is to the mutual benefit of these projects, as well as helping to convey a uniform message to policy and decision makers.

Project structure

The DEWFORA project is structured in eight work packages.

- **WP1** includes all activities related to the management of the consortium and communication with the European Commission.
- **WP2** reviews existing capacities in Africa for monitoring, forecasting and early warning of drought on local, regional and continental scales, as well as mitigation practices and adaptation strategies. A gap analysis is included to help identify constraints and opportunities for improvement.
- **WP3** assesses and maps vulnerability to drought through newly developed indicators. It assesses the expected impacts of climate change on the frequency of occurrence and persistence of droughts in Africa and the impact on drought vulnerability.
- **WP4** concentrates on drought forecasting from the meteorological, hydrological and agricultural perspectives. Appropriate methods for forecasting drought at medium to seasonal time scales are developed and made operational within a pilot drought forecasting system.
- **WP5** addresses early warning of drought and the response to such warnings. Response is assessed at the community, national and trans-boundary scales. Advances made in the previous work packages, as well as experience gained in the case studies will be consolidated to establish a framework and guidelines for effective drought early warning and response in Africa.
- **WP6** integrates the advances made in drought monitoring, forecasting and warning by applying them in the case studies. The methods developed are tested and refined in order to ensure an efficient contribution to early warning and response. In addition, a prototype pan-African drought monitoring and forecasting system is developed, and a comparative review of European and African initiatives performed.
- **WP7** focuses on disseminating the knowledge gained, and ensures sustainable embedding of that knowledge with stakeholders and water resources capacity building programmes. This is achieved through mobilising existing knowledge networks in Africa, through interaction with stakeholders, and through workshops and training events.
- **WP8** is dedicated at establishing scientific synergies and exchange with related research projects in Europe and Africa, and outreach to policy networks in Africa and Europe.



Components of the project and their interdependencies