

Preface

Africa is an economically poor continent, contributing less than 2% to the world gross national product while holding more than 15% of the world population, with the population growing rapidly. Despite efforts by African countries, the amount of freshwater and food available per capita has steadily decreased over the past several decades. The reasons for this are numerous and complex. Africa has suffered from continual neglect over the centuries, both from the socio-economic and scientific points of view. Thus, it would be quite unrealistic to believe that solutions to water-related problems could be simple and achieved quickly. We are convinced that sustainable solutions to Africa's most pressing problems have to be science-based and implemented in a holistic and integrated approach that involves relevant disciplines from the natural, socio-economic, and health sciences. Another important element of sustainability is the efficient transfer from *science to application*. The IMPETUS research project has pursued this pathway successfully for almost 10 years and was structured into three research phases, as described below.

The first project phase was dedicated to data acquisition and to the comprehensive assessment of the *status quo* (i.e., the identification of existing water-related problems together with their underlying physical processes and interdependencies). In the second phase, qualitative and quantitative models were adapted or newly developed. Projections of future developments were derived from scenario calculations and from expert knowledge. In the third phase, tailored tools for local decision makers were developed to enable sustainable natural-resource management. A supplementary phase concentrated on the implementation and operationalization of research results. The transfer of knowledge and the intense capacity development undertaken were intended to facilitate African citizens to take responsibility for sustainable development.

The present publication entitled, "Impacts of Global Change on the Hydrological Cycle in West and Northwest Africa", is based on the long-term applied research experience of IMPETUS in two African watersheds: the Ouémé catchment in Benin and the Drâa catchment in Morocco. This publication is targeted for the following audiences: (i) scientists interested in state-of-the-art interdisciplinary research on the hydrological cycle who would like to obtain insight into neighboring disciplines; (ii) application-oriented scientists interested in knowledge transfer to application from an exemplary integrated research project, including how such a project could be designed conceptually, and (iii) decision makers with some scientific background who wish to learn how sound research results can be incorporated into the decision making process in the context of natural resource management and Global Change.

We hope this publication is welcomed and accepted in both scientific and non-scientific communities, and that it spurs interest in application of water management principles to aid Africa.



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Speth, P.; Christoph, M.; Diekkrüger, B. (Eds.)

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