



Impact of climate and environmental changes on regional biodiversity. Results and perspectives from the BIOTA West Africa and GLOWA Volta research networks in West Africa

U. Falk (1), J. Szarzynski (2), T.Landmann (3), M. Schmidt (2)

(1) Center for Development Research (ZEF), Department of Ecology and Resource Management, University of Bonn, Walter-Flex Strasse 3, 53113 Bonn, Germany, (2) German Remote Sensing Data Center (DFD), German Aerospace Center (DLR), Oberpfaffenhofen, D-82234 Wessling, Germany, (3) Remote Sensing Unit of the German Aerospace Centre (DLR), University of Wuerzburg, Am Hubland, D-97074 Wuerzburg, Germany (Ulrike.falk@gmail.com / phone: +49-228-731725)

The vulnerability of West African countries to climatic and environmental changes is likely to increase within the next decades as demands on resources continuously rises. The main driver of the change is growing population and resulting expansion of agricultural areas. In recognition of the societal need to develop strategies to reduce the socio-economic impact, interdisciplinary research is required. Thus, an integrative multiscale monitoring concept was designed within the framework of the BIOTA West Africa and GLOWA Volta scientific research networks, funded by the Federal German Ministry for Science and Education (BMBF) in cooperation with several counterparts from Benin, Burkina Faso, Côte d'Ivoire and Ghana. The focus of the BIOTA West Africa network is the analysis of human-induced changes in terrestrial biodiversity in an interdisciplinary and integrative approach. Prime objectives of the GLOWA Volta project are the analysis of the physical and socio-economic determinants of the hydrological cycle and the development of a scientifically sound decision support system for the assessment, sustainable use and development of water resources in the Volta Basin. Under the umbrella of the combined scientific networks an instrumental observation system was established - described as "Biophysical Observation Network" (BON). This collaboration aims at improving current knowledge and understanding of West African climate and biodiversity. The project is broadly motivated by an in-

terest in both fundamental scientific issues and applied problems resulting from the societal need for improved predictions of current and the expected climate change scenarios. The Biophysical Observation Network combines important features of biophysical ground measurement and remote sensing techniques in order to enable the i) monitoring of large scale vegetation, hydrologic and bio-geophysical dynamics and ii) the simulation of climate dynamics based on observations of biosphere - atmosphere interactions. A suite of remote sensing products visualizing and quantifying biophysical features in time and space will be employed to up-scale information derived from the in situ observations. Change analysis is focussing on biotic and abiotic drivers as well as socio-economic and climatic processes. The multiscale data collection from the observation sites is progressively incorporated into a web-based GIS database. Additionally, sites are used for comprehensive ground-truth surveys, essential for the assessment of accuracy of classified satellite imagery. At the same time they are used by local students and research scientist and thus serve to build capacity in the region. The overall goal of GLOWA and BIOTA is to provide local stakeholders and decision makers with reliable information to promote the sustainable use and conservation of biodiversity and other natural resources in West Africa.