International Summer School
"Land Cover and Climate Change in West Africa"

The summer school "Land Cover and Climate Change in West Africa", which took place between the 21st and 26th of July in Wuerzburg, is part ofwas organized by the graduate program "Global Change Ecology (M.Sc.)" (University of Bayreuth) within the Elite Network of Bavaria, namely by Dr. Christopher Conrad (University of Würzburg) and Dr. Christoph Beck (University of Augsburg).

The 18 participants got the opportunity to meet 13 Lecturers from the Universities of Augsburg, Bonn, Prague, Wuerzburg, the German Aerospace Center (DLR) and the Center for Development Research (ZEF). Latest research results about the interactions between land cover and climate in West Africa, human impact to land cover change and effects of climate and land cover change on the hydrological cycle were main topics of the summer school.

Photo 1: Participants of the summer school at the University of Wuerzburg

Most presentations were based on findings of the BMBF funded projects GLOWA Volta and GLOWA Impetus. In addition, a wide range of technical exercises was offered to improve the skills in digital image analysis, statistical modeling, agent based simulations, and dynamic climate modeling. State-of-the-art software and geographical information systems served for these practical parts of the summer school.

Social events could be used for networking and personnel talks between the students and the lecturers. A wine tasting took place in the “Staatliche Hofkeller”, the famous wine-cellar in the Residenz of Wuerzburg and the students and lectures explored Wuerzburg together with the local night watchman.

Photo 2: Exploring Wuerzburg together with the local night watchman

In a final workshop main outputs of the summer school were summarized and discussed:

The summer school focused on West Africa where an extreme climate gradient can be observed within a distance of less than 2000km. The types of vegetation cover range from tropical rain forest to different types of savannahs and finally to the desert. The presentation mainly addressed natural settings and the interrelations between land cover or land use and the climate. The impact of new settlements or roads on land cover and the role of according land transformations such as deforestation and agricultural activities for climatic changes were demonstrated. Vice versa, significant forces of climate change on presently cultivated crops or the dispersal of diseases such as malaria were shown and widely discussed. Climatic influences on alterations in hydrological conditions, essential for food production in the region, were also highlighted.

The discussions disclosed that it is difficult to get reliable and accurate information (data) which is needed as a basis for every spatial planning process. There is a strong need to apply new technologies such as climate modeling or remote sensing to understand the processes and linkages between land cover and climate. There are still many calibration efforts outstanding to

increase the validity of the models. Only accurate knowledge would allow for transferring the results to the policy makers in the region. The students identified the demand for more scientific conceptions to investigate the interrelations of hydrological, climate, and land cover parameters and to look for more detailed conclusions for implementation of improvements. For a more solution oriented research, a stronger integration of social sciences and an exchange of knowledge was recommended. One example for the latter was that traditional crops have the highest potential for surviving under future climate conditions.

Altogether, the summer school offered an overview about technical advances to assess present and future environmental framework conditions for the development of the highly populated region of West Africa. It could be shown, that adaptation strategies to altering climatic conditions, hydrological cycles, and changing land cover need to be developed.