GlobE: Wetlands – Feuchtgebiete in Ostafrika

Interim report 1

ZE: miscellaneous Project spokesman: Prof. Becker	Förderkennzeichen: 031A250A-H
Vorhabenbezeichnung: GlobE: Wetlands – Feuchtgebiete in Ostafrika Vereinbarkeit von Naturschutz und künftiger Nahrungsmittelproduktion	
Laufzeit des Vorhabens: 01.07.2013-30.06.2016	
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The following short report for activities undertaken until December 2013 within the GlobE-Wetlands research consortium focusses mainly on recruitment of personnel, establishment of cooperation agreements and the organization of infrastructure, both in Germany and Africa. Activities actually started only after the kick-off workshop in Tanzania in September 2013. Field research can only start with the onset of the rainy season in 2014.

Coordination (A):

An administration and coordination assistant (Mr. E. Kiene) has been recruited, and a project office and workspaces for scientists have been established in Bonn (Nussallee 1). The purchase and shipment of equipment was prepared and will be finished in 2014. Four memoranda of understanding have been established and were signed by the University of Bonn and four African partner organisations. The kickoff workshop has been conducted with 38 participants from Africa and Germany in Dar es Salaam 7th – 9th September 2013. The main goals of the workshop have been to concretize the future project planning and to intensify the networking between the different project parts and the African and German project staff. The recruitment of the first master scholarship holders will take place in 2014, as the results of the typology tour (expected to be available in early 2014) will be used to define concrete thesis topics.

Agrar (B):

Miguel Alvarez (Vegetation ecology) and Daniel Kyalo Willy (Economics) have been recruited as scientific project staff. Two PhD-scholarship holders have been recruited for the topics “Characterisation and typology of wetlands in East Africa” and “Management options for increased rice productivity in East Africa Wetlands”. The purchase and shipment of equipment was prepared and will be finished in 2014. Nine scientists of the agriculture project part participated at the kickoff workshop in Dar es Salaam 7th – 9th September 2013.

The typology tour was organised and took place in all four project countries 12th October - 16th December 2013. Staff and PhD students of the project parts B, C and H have been involved. The "Wet-Health" approach by D. Kotze, determining the disturbance degree of wetlands was adapted to the methodological framework of the wetland typology followed by a "Wet-Health" workshop with D. Kotze 20.-22.10.2013 in Rumuruti, Kenia. Subsequently, 58 randomly chosen tiles of 250x250 m have been investigated, mapped and classified regarding land use and vegetation and land users were interviewed). The participants of the project part B have been mainly responsible for vegetation and agronomic/socioeconomic data acquisition. The vegetation data was collected in small sampling plots (10x10 m) for the different land use units. The agronomic/socioeconomic data was collected with a questionnaire, group discussions with local experts and visual assessment. The results of the tour for comprehensive analysis and the establishment of a wetland typology will be available in 2014.

Geo (C):

The GlobE-C Geo cluster including the hydrology, hydrogeology, and remote sensing working groups has been involved in diverse working package activities during the first reporting period 01.07.-31.12.2013. All working groups have participated in the development of the methodological framework of the wetland typology work package and practical preparations of the typology tour during the first half of the reporting period. During the wetland typology tour (12.10.-16.12.2013), 58 tiles that were randomly selected for all wetland sites in Kenia, Tanzania, Rwanda and Uganda. The tiles were surveyed according to the selected wetland typology variables. Preliminary results of the entire typology group were presented at an internal workshop at the Department of Geography on 16th of December 2013. Complete data sets for comprehensive analysis and the establishment of a wetland typology will be available in 2014.

All working groups have conducted a first literature review as well as a spatial and temporal data analysis for all research sites. Furthermore, they have been involved in the development of selection-criteria for the Super-Testsites in Uganda and Tanzania based on the first results of the typology research. On the wetland scale the hydrogeology and hydrology working groups have developed their field instrumentation scheme and sampling methodology and started to order hydrogeological and hydrological field equipment. On the catchment scale the catchments have been delineated and first catchment characterics were determined with the hydrological model SWAT based on SRTM data (90 m). The remote sensing working group started to develop a wetland delineation and classification scheme and made first test flights with the MAVinci UAS SIRIUS I system for multi-temporal reconnaissance flights which is planned for all wetland sites. With respect to water-related ecosystem services the hydrological working group started to develop a "DPSIR" (Driver, Pressures, State, Impact, Response) scheme which will be embedded in an overall wetland multi-criteria analysis on a national scale.

Public Health (D):

Activity A3c: Existing and perceived health risks: In order to determine existing health risks associated with wetlands in East Africa, the working group Public Health started to review literature and develop a comprehensive list of positive and negative health effects. Health effects cover physical health, e.g. accidents, infectious diseases, as well as mental health and well-being, such us life quality and place identity. This list will be used to develop and assess the "methodological toolkit" (to monitor wetland-use health risks in 2014.

Activity A5c: Groundwater dynamics, water quality and public heath: End of 2013 the portable water laboratory for the microbiological analysis in the field was purchased. First analysis will be carried out in 2014.

Work package D.2: Human health impact: Work package D2 aims to deliver an understanding about public health aspects associated with wetland ecosystems. Interdisciplinary work is required to carry out health impact assessments (HIA) in relation to different wetland types. The human HIA not only investigates physical health effects, but also integrates mental and social well-being, including subjective feelings and quality of life, into research (Horwitz et al., 2012). One of the outputs will be guidance on how practically to implement the theoretical concept of the health impact assessment in the wetland setting.

In September 2013, a field trip to Ifakara, Tanzania and Kigali, Rwanda (November) determined suitable field sites for the research. The typology field team mapped different land uses representing the current situation in all four project countries. During the field trip contact was established to the Ifakara Health Insitute (IHI) in Ifakara. IHI is interested in developing their capacity in the field of water and sanitation and in a first step of cooperation a joint supervision of a Master student will be done by IHI and Institute for Hygiene and Public Health Bonn, starting in February 2014. This Master thesis will focus on water and sanitation supply of farmers during their temporary stays in the floodplain for weeding and harvest.

The public health working group started to review literature and develop a comprehensive list of positive and negative health effects. Firstly, health effects associated with wetland usages will be collected. In a second step, this list will be narrowed down to the East African context, including field observations from the field trips in 2013 and those of the PhD students in February/March 2014. Further work comprised gathering of information of relevant stakeholder in the African project countries, e.g. NGOs.

Ethno (E):

Up to date, only preparatory activities and logistic arrangements have been conducted within this subproject. Therefore, no scientific results can be reported for 2013. Parameters for recruitment of personnel have been jointly agreed upon with all project partners during a kick-off workshop in Dar es Salaam (September 07-09). As a consequence, recruitment only started from mid-September. On November 1st, Jonanna Treidl has started her work as PhD stipend. She will work on Gender-releated questions pertaining to the usage of wetlands in Ruanda. Ms Treidl has started working on the relevant literature, she currently is in Rwanda on an exploratory field trip (as of March 2014).On December 1st, Mr Innocent Mwaka from Gulu, Uganda, has started his work as PhD stipend. His work will focus on the role of institutions and state interventions for agrarian change. His work will be based in the Ifakara Region (Tanzania). Due to the time consuming process of visa application for Germany, Mr Mwaka's start in the process has been delayed and he could only come to Germany end of December 2013. A third PhD stipend will be recruited by March 2014. Based on preliminary results of the typology-team (Milestone 1) the research areas have been assigned to the individual working packages of the social-anthropology sub-project. The focus areas will be Ruanda (Treidl), Tanzania (Mwaka) and Uganda (Namulonge). The social-anthropological research components are intimately linked with agronomic research. Thus date gathering in the field can start earliest with the beginning of the rainy season in March 2014.

Meteo (F):

Between July and December 2013 the Institute of Geophysics and Meteorology of the University of Cologne (UoC) undertook work in Clusters C (Integration and Scenarios) and D (Extrapolation and Recommendation) of the GlobE-Wetlands project. The main activities within this time period were associated with Work Packages (WPs) C1 and D2.

Activity C1a: Operationalization of geodatabase: Between 01 and 07 August 2013 Dr. Volker Ermert visited the Rwanda Meteorological Agency (RMA) to obtain atmospheric observations from weather stations in Rwanda. Data includes daily rainfall, maximum and minimum temperatures as well as measurements from automatic weather stations. Regarding the access to meteorological data, various data sets have been investigated. The availability of data from the global telecommunication system was analyzed. The database of the Global Historical Climate Network (GHCN) and the Integrated Surface Database from the Hadley Centre (HadISD) have been consulted. The available data were integrated into the so-called “East Africa - Observation Database” (EA-ObsDb), a tool that can merge data sets, produce overview graphics, and where predefined data sets can be selected in a user-friendly file format.

At present only few atmospheric time series are available for East Africa within the EA-ObsDb. The access to further data sources is required. For example, data at national weather services like in Kenya and Tanzania is known to exist. However, these data sets are not freely available and too expensive to be purchased by the project. Therefore, the setup of collaborations is required. For Kenya, collaboration with a Kenyan scientist already allowed us to include 16 daily rainfall stations data for 1960-2008 into the project’s meteorological database. To obtain more data, the negotiation of a Memorandum of Understanding (MoU) has been started between the RMA and UoC as well as between the Tanzanian Meteorological Agency (TMA) and UoC. The MoUs shall clarify the access to meteorological time series from the particular countries, shall provide capacity development through a workshop, and can lead to future collaboration. The lack of data can be partly overcome by consideration of surrogate data sets. In terms of precipitation, rainfall estimates from low earth-orbiting satellites can be used. Other variables like temperature, sea level pressure, and wind can be obtained from reanalysis products.Preliminary investigations into the rainfall data did not show significant trends in total rainfall in the study regions between 1960 and 2010.

Activity D2d: Wetland malaria risk assessment: In the second phase of the GlobE Wetlands project, the occurrence of malaria is going to be investigated for wetland areas. For this purpose, dynamic mathematical-biological malaria models are available, which are driven by daily precipitation and temperature data. The challenge here is to adapt the models to local wetland malaria conditions. Entomological and parasitological malaria observations are required for this task. Therefore, the UoC has contacted the "Ifakara Health Institute" (IHI), which owns a local malaria expertise for the study area within the Kilombero flood plain of Tanzania.

Mainz (G):

In a first training two PhD-Students, one from Mainz and one from Jülich, were introduced to descriptions of wetland soils. The student from Jülich mapped and surveyed the Test-Sides in Kenya, Ruanda, Uganda and Tanzania, to get a first overview of the soils. The soil samples from Uganda were analyzed in the soil laboratory of Makerere University, Uganda.

WP A1: The literature and data-research is an ongoing process since July 2013. In September 2013 a German PhD-Student was found for the project. Until March 2014 his college study is still in progress but he will join the project in 2014, first as research assistant and after his graduate degree as PhD-Student. The typology tour to the four countries was scheduled from October to December 2013. This date was chosen because of the rain period in the countries. During the typology tour a trained (September 2013) student from Jülich mapped and surveyed all four Test-Sides in Uganda, Tanzania, Ruanda and Kenya.Soil samples from Uganda were analyzed in the soil laboratory of the Makerere University, Uganda. This analysis contained electric conductivity (EC), exchangeable potassium, total nitrogen and available phosphorus. The results of analysis were submitted to Jülich and Mainz.

Jülich (H):

Activity A1a: Forschungszentrum Jülich has contributed to the wetland inventory in all four African countries by soil sampling and analysis of key soil parameters. The wetland inventory was conducted together with the Universities of Bonn and Mainz as well as all African partners of the project. On the basis of the results of the wetland inventory the key research sites in all four countries have been selected, of which two have been categorized as “super test sites” (Ifakara/Tanzania and Namulonge/Uganda), at which all relevant processes will be studied in joint monitoring and experimental studies.

Activity A5a: The portable CO_2 analyzer has been procured, and first test measurements have been successfully conducted. There have been no delays and deviations from the financial, work and time planning. The work started on schedule, and no adjustments of the project aims have been necessary in the reporting period. Furthermore, no third party results have arisen that were relevant for the project work.

Conclusions:

Overall is must be noted that the activities started with some delay as most research objectives were only refined during the kick-off workshop in September 2013. With field research activities being tied to the on-set of the rainy season, most experimental studies will start in 2014. While the milestones for 2013 were generally achieved, the delay in field activities will entail a cost and resource neutral extension of the total project duration by 3-6 months for most sub-projects.