

GLOWA VOLTA PROJECT (GPV)

Report on the Training Workshop for Data
Management and Application of GIS and Remote
Sensing in Natural Resources Management

GLOWA
Volta

ORGANIZED BY:

UNITED NATION UNIVERSITY- Institute for Natural Resources in Africa
(UNU-INRA)

Centre for Development Research (ZEF)



Ouagadougou, December 12 -14, 2007

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GROUP PHOTOGRAPH OF PARTICIPANTS



Participants of the Training Workshop for Data Management
and Application of GIS and Remote Sensing in Natural Resources Management
Ouagadougou, Burkina Faso
December 14, 2007

ACRONYMS

List of abbreviations and acronyms

VBA	Volta Basin Authority
CEDEAO	Communauté Economique de Développement des Etats de l’Afrique de l’Ouest
CEDRES	Centre d’Etudes, de documentation, de Recherches Economique et Sociales
DGRE	Direction Générale des Ressources en Eau
DEIE	Direction des Etudes et de l’Information sur l’Eau
DMB	Direction de la Météorologie du Burkina Faso
IUCN/BRAO	Union Mondiale pour la Nature/Bureau d’Afrique de l’Ouest
2iE	Institut International d’Ingénierie de l’Eau et de l’Environnement
ONG	Organisme Non Gouvernementale
OMD	Objectif du Millénaire
INERA	Institut National de l’Environnement et de Recherche Agricole
SIG	Système d’Information Géographique
IGB	Institut Géographique du Burkina Faso
SNSF	Service National des Semences forestières
UO	Université de Ouagadougou
UNU-INRA	United Nation University – Institute for Natural Resources in Africa

1.0 INTRODUCTION

The GLOWA Volta Project (GVP) intends to transfer a comprehensive array of scientific outputs and tools in the form of information, data, models and various Decision Support Systems for the Volta Basin, which have been generated throughout its 3 phases of implementation.

To ensure that these products are used for the greater and sustained benefit of the entire Volta Basin (the 6 riparian countries that make up the basin), GVP has identified the relevant stakeholders in Burkina Faso who play or are expected to play vital roles in the water resources management decision making process in the basin. In September of 2007, GVP organized a workshop to assess the needs of these stakeholders and found three important training capacity need areas, including problem of data quality, accessibility, and generation; computer modeling of hydrology and meteorology; how to apply such models for water resource management.

Therefore, the GVP organized from 12-14 December 2007 this workshop to address one of the key training capacity needs identified in the September workshop. This workshop addresses the problem of data quality, accessibility, and generation through the presentation of GIS and Remote Sensing applications.

1.1 Workshop Brochure

Short workshop brochure, which contains workshop objectives and expected outcomes was distributed

The workshop was intended to achieve the following objectives:

- To present GVP outputs, scientific tools and models to stakeholders of the water sector within the Volta Basin
- To identify Burkinabe institutions and actors and their interests and capacity for knowledge sharing
- To assess the capacity building needs of stakeholders to effectively utilize the GVP products in the water resources research and management in the basin

The expected outputs were:

- GVP output and other products introduced to the stakeholders
- Relevant Burkinabe institutions and actors for knowledge sharing and capacity building identified
- Training needs of the various stakeholder groups in the use of GVP tools and models for sustainable use of the water resources of the basin identified
- The necessary research support for the maintenance and further development of GVP tools and models for use in the basin ascertained.

1.2 General Objectives and Expectations of the Workshop

Dr. Dilnesaw Alamirew explained that this workshop is a platform to learn from each other. The goal of the workshop is to gather knowledge about applying GIS and Remote Sensing in hydrology and meteorology in order to acquire, manage, and store data efficiently and effectively. This is important because hydrological and meteorological data is used to study natural systems for better water management (and natural resources management in general). This workshop will build the capacity

of hydrology/meteorological organizations in Burkina Faso through knowledge sharing and training of useful models and tools.

2.0 OPENING

2.1 Chairman's Opening Remarks

- Opening remarks given by Dr. Barry Boubacar
- Followed by welcoming remarks and background information on GVP by the DGRE general director Dr. Francis D. BOUGAIRE

2.2 Introduction of Workshop Activities

Dr. Dilnesaw Alamirew provided background information about the GLOWA-Volta Project (GVP) and its objectives. He said that the purpose of project is to study and measure the impacts of climate change and land use changes on the water resources in the Volta Basin. The Volta basin comprises of 6 countries and research is being conducted in each of these countries. Last time, a capacity needs assessment was held in Ouagadougou to assess the capacity needs of the GVP's partners in Ouagadougou. 3 major training capacity need areas were identified by the participants. These included: 1) Problem of data quality, accessibility, and generation; 2) Computer modeling of hydrology and meteorology; and 3) How to apply such models for water resource management. The current workshop was held to address the first capacity need area. Additionally, partners at the previous workshop expressed an interest in the type of data that has been collected in Burkina Faso, which is why 2 major data gathering institutions were invited for this workshop. They presented what kind of data they are collecting and how they store, manage and check the quality of their data. Also, GVP staff presented their activities according to the following:

1. GVP data collection methodology and findings
2. Handling of missing data
3. Application of GIS and remote sensing in natural resource management in Burkina Faso
4. Remote sensing and GIS application in GVP and BIOTA Project

Also invited were institutions that are working in Burkina Faso and use and apply GIS, including IGB, to talk about how they use and apply GIS. We will also present how we use GIS and Remote sensing for GLOWA-VOLTA project for understanding the natural system as well as how the GVP manages it data. It was highlighted that this workshop is a platform to learn from each other.

Dr. Dilnesaw Alamirew continued with a presentation on "Why we need data". The main highlights of his presentation were:

- The problems identified:
 1. In Africa, there is food shortage because of population increase and production is not increasing fast enough. Per capita food projection is going down.
 2. There is also water scarcity in Africa, including both physical and economic water scarcity. There is a lack of access to safe water in many parts of the continent.
 3. Globally, there is climate change and temperature increase.
- In order to address these problems we need to understand how the natural system behaves and how we can use it for the benefit of humanity. This is why we need data: To understand the natural system.
- The supply of water availability for our use is limited by nature, which means we have to use water resources properly. This requires: knowledge, basic understanding of the hydrologic system, the processes influencing them both spatially and temporally

- In order to generate information and knowledge about our water resources we need to collect hydro-meteorological data. This data is important for many purposes: planning, designing, operating and maintaining a country's multipurpose water supply; making flood warnings; designing highways and bridges; mapping floodplains; etc.

3.0 PRESENTATIONS (Day 1)

3.1 Meteorological Data Collection, Storage and Management by Direction de la Meteorologie du Burkina Faso (Mr. Ali Jacques Garane)

Key Points

- Mr. Garane first provided a history of natural resource management in Burkina Faso
- The mission of the DM (Direction de la meteorologie) in Burkina Faso includes: research, collect, management and archive information on meteorology and climate. In order to accomplish its mission, the DM has many stations for observation and measurement purposes. He showed everyone a map of the measuring stations and the time-frame for their opening in Burkina Faso. He said that these stations conduct meteorological measurements using parameters, such as air temperature, soil temperature, evaporation, relative air humidity, atmospheric pressures, etc. and hydro-meteorological measurements using parameters, such as frequency of rain, evaporation, etc. The data gathered is used to do calculations, such as actual evaporation versus potential evaporation.
- He then went over the equipment, instruments, and products used to measure and collect data
- Finally, he described DM's contribution to the GLOWA project, which includes providing domains of intervention and information available for water resources.

3.2 Hydrological Data Collection, Storage and Management by Direction des Etudes et de l'Information sur l'Eau (Madame Jacqueline Zoungana)

Key Points

- A hydrological follow up in Burkina Faso is necessary because it is a country subjected to climatic risks and its surface water resources play an important part in its socio-economic development.
- Madame Zoungana then presented DEIE's approach to the hydrological follow-up including standard of data, methodology and collection, as well as a map of the hydrological network, which has 94 hydrometric stations across the country.
- Data collected is analyzed, treated, stored in a base called HYDROM
- Data is disseminated to and used by ministries (infrastructures and roads, agricultures, etc), organizations or institutions, universities' engineering and design departments, and various other projects.
- Projects like GLOWA are welcome for better water resource management

3.3 Hydro-Meteorological Data Collection, Storage and Management by GVP/UNU-INRA (Dr. Dilnesaw Alamirew)

Key Points

- GV was originally a scientific project to generate knowledge for sustainable water management.
- Dr. Alamirew first described the process of data collection in GVP, including test sites in Burkina Faso and Ghana; types of data collection, including meteorological and hydrological

measurements, as well as other measurements like sensible heat flux, eddy covariance, sap flow and tree density; and equipment and methods used.

- He then described the flow of data transmission from the sensor to the PC and the output using the various equipment and methods
- Data is stored in data loggers at the field level; PC hard drives, paper handouts, CDs, and storage modules at the site; paper readouts, CDs, external drives, and local servers at the country office, and CDs, external drives and the GVP server at ZEF-Bonn.
- Data management and quality control is undertaken through routine recalibration, program limit checks, and basic statistics
- The data collected is used by GVP students, GVP and affiliates for research, to feed GVP DSTs and for modelling.

3.4 Dealing with Missing Data by GVP/WRI/UNU-INRA (Dr. Barnabas A. Amisigo)

Discussion

Key Points

- Data and the information derived from its analysis are required for informed decision making and purposeful activities. However, the procedures adopted in analyzing data depend on whether the available data are complete (without gaps or missing parts) or incomplete
- When data is incomplete, you need to make it complete by either case deletion or imputation (gaps infilling)
- Examples of data imputation methods include Regression Imputation, Stochastic Regression Imputation, and EM Imputation (with an assumed model)
- Imputed data is NOT real data, and variance estimates need to reflect this uncertainty.
- Methods used in making data complete depend on: the assumption of the missingness mechanism; the percentage of data missing; and whether the variance structure of the data needs to be preserved

Discussion

Q: How do you know when to accept or reject your results for missing data?

A: Any model you think is suitable for describing it. So, if you just want a simple way to create your dataset, there are statistical data sets. For those in Environmental sciences, there is no software to deal with missing data.

Q: How do you know when your data is “randomly missing” or missing because of another reason?

A: Before you choose method, you have to assume why the data is missing. For example, if you are missing all the high flows, then you know that the data is probably not “randomly” missing. So, the quality of missingness can be deduced from the quality of the data that you do get.

Q: In the beginning of the presentation, you presented some data, one set of data was from 1 hydrological station for which data was almost complete (Burkina Faso) and the method you showed, the EM method, was based on this series which was almost in Burkina Faso, but for other hydro stations, there are many many gaps so in this case, where you have many missing data, what would you do?

A: We will make a second demonstration to show. The next presentation will be hands-on.

A: You can use another hydro model.

Q: Up to what percentage of missing data can you use this method for dealing with missing data? So up to which level can you use this to complete the data?

A: Difficult to say how long the gap should be for you to know if you, but in filling in the gaps you have to think about filling the gaps. Up to 50% good but as the gaps increase, the quality of the data that you can use to fill the gaps is not as good (?)

A: purpose of your analysis is important to consider too. Depending on what you expect to do with the data, what your objective is should help you decide what method to use.

3.5 Demonstration of Dealing with Missing Data by GVP/WRI/UNU-INRA (Dr. Barnabas A. Amisigo)

Key Points

- The main objective of this presentation was to present the discrete spatio-temporal dynamic modeling framework and its application, which is used for filling in gaps in daily riverflow series using all the available spatial and temporal information simultaneously
- It is important to have stable parameters in order to apply the framework. If the parameters are not stable, you need to continue to run the EM algorithm to estimate a new parameter set which is stable before you can continue.
- The framework was demonstrated using actual and missing data, and it was concluded that it was useful in filling short gaps, for example, it produces good estimates of missing values in daily riverflow series.

Discussion

Q: Do you need to know matlab to use this program?

A: Good thing about matlab is that all these are dealing with matrices and in matlab you don't have to do that.

Q: The number of parameters to use in the model-how do you know how many?

A: Depends on the data that you have

3.6 Gestion de l'Information Geographique au Burkina by IGB (Mr. Claude Obin Tapsoba)

Key Points

- Mr. Tapsoba first provided a historical overview of the production of geographical information in Burkina Faso, starting from before independence, when basic cartography involved 1/50000 scale, to after independence, when the greatest scale of the cartographic cover of the country is 1/200000. He says this scale, however, dates back to the 1950s and covers only 35% of the territory.
- In spite of the assets and the enormous progress made in the environmental information management, the sector of geographical Information remains fragmented in Burkina.

- It is essential to invest in geomatic applications to satisfy the many demands for services and products and exploiting the potential offered by information and communication technologies. This requires an innovative national policy.
- He then presented IGB's take on a national policy, which should set up, in a gradual way, a national Infrastructure of space data (INDS) which conveys information for the sustainable development of all the sectors.
- Principles used In order to achieve this goal, include: the principle of the shared resources; the principle of the partnership; the principle of the networks; and the principle of the infrastructures of the data

Discussion

- A participant presented a partnership between DGRE and IGB-examples of what they should and should not do.
- Mr. Garane asked why IGB still has not produced a map of BF at 1/50 000 because English speaking countries (eg. Ghana) all have this coverage but BF doesn't. Only 35% of the country is covered by such maps, the rest of BF has full coverage at 1/200 000 only and this dates from the French colonists in the 50s and 60s.

3.7 Utilisation des SIG pour la détermination des Zones a Risque Environnemental et Social Eleve by IGB (Mr. Abdoulaye Belem)

Key Points

- Mr. Belem presented a study involving the identification of zones of social and economic risks (ZARESE) using a project in August – September 2004 on the issue of poverty reduction in the Sahel.
- The methodology involved validating and classifying criteria, identifying and validating indicators, identifying the relevance and reliance of data collected, determining the thresholds for the indicators, and finally selecting the 'ZARESE'.
- He then shared the project's details by presenting a map, the flowchart methodology, and the results.
- IGB Faso is now a member of the National Committee of piloting of the project

Discussion

Mr. Garane asked whether this project has been financed on the basis following this study. Mr. Belem said they got the financial support before the zones were selected and this study was done.

3.8 Suivi Spatio Temporal des Changements d'occupation des terres au Burkina by Cadre en Geoinformation (Mr. Bako Ferdinand)

Key Points

- The presentation demonstrated the use of BDOT, a land use database used to guide various policies by gaining knowledge of the environment, land use structure, state of natural spaces, etc.
- The demonstration included application of BDOT to follow up surface water resources spatialisation and temporal changes in Burkina Faso. Some other examples of BDOT use include town and country planning, climate change, farming, forest management, etc.

- It was concluded that BDOT faces some difficulties due to the methodology, the scale of capture data and cartographic rules, and it is not very useful in large scale activities. Nevertheless, the database is essential for accurate research and project management. For reinforcement, it could be made complete by using it along with another Land Cover Classification System.

Discussion

Q: A participant wanted to know whether the bases from other partner institutes were used for the work presented.

A: No, he says the work was mainly based on satellite images

Q: This required the use of landsat images, but soon the landsat images won't be available.

A: Yes, you can use other images other than landsat.

Q: Is it possible to evaluate the quantity of water that is flowing from one country to another at the borders

A: Mr. Ferdinand thought it is not possible and it is also not the role of his institute to do that (IGB)

4.0 PRESENTATIONS (Day 2)

4.1 Data Infrastructure and Data Management in the GLOWA Volta Project by ZEF/GVP (Mr. Antonio Rogman)

Key Points

- It was concluded that BDOT faces some difficulties due to the methodology, the scale of capture data and cartographic rules, and it is not very useful in large scale activities. Nevertheless, the database is essential for accurate research and project management. For reinforcement, it could be made complete by using it along with another Land Cover Classification System.
- This presentation provided a foundation for understanding GIS and its application.
- Mr. Rogman explained what GIS is and gave examples of environmental applications of GIS.
- Afterwards, he explained how GIS models the real world: the process of data collection, data management, and spatial data analysis methods.
- Lastly, he discussed the presentation of data on maps.
- Mr. Rogman's second presentation was on data management in the GLOWA Volta Project.
- Mr. Rogman began by discussing problems with data management such as the lack of meta data and the time-consuming and sometimes difficult process of data transfer.
- He explained the data management solutions that GVP would like to offer.
- Following this, Mr. Rogman explained in greater detail what data management consists of such as data description, data organization, data quality assurance, data access and distribution, and security.
- He then explained metadata standards and the creation of metadata as well as data identification, formats, security, access control, and quality.
- The next section of Mr. Rogman's presentation included slides that are part of a digital GVP-data-management-workflow manual and documentation to be completed and published at the beginning of 2008. Mr. Rogman discusses data management workflow steps and GVP data infrastructure.

Discussion

Questions were raised regarding compatibility of open software with older or commercial software

Q: What is the point of collecting data if you cannot/are not going to do anything with it? Why bother collecting the data in the first place?

A: An issue we have to deal with in Africa. Is data collection a collective endeavor? Mr. Boubacar said that you can't develop a country if you don't have data. But we have to understand the politics: data should be free of charge! (for example, TRIPS issues intellectual property: we need it to develop a country but by creating intellectual "property" current "property owners" are preventing developing countries from developing because they don't have access to the data/the intellectual property needed to develop).

4.2 Application of GIS under GVP and in BIOTA Africa by GVP/UNU-INRA (Dr. Dilnesaw Alamirew)

Key Points

- His case study was the Upper Awash River Basin where his objective was to 1) assess the spatial distribution of water resources and 2) to analyze the impact of different land management practices on hydrologic response and soil erosion.
- Dr. Alamirew concludes that: 1) the model produced reliable estimates of streamflow and sediment yield with highest goodness-fit; 2) results demonstrated that GIS based Hydrological model SWAT is a capable modeling tool for (a) analyzing hydrologic processes and (b) evaluating the outcomes of a certain management action on water quality of the system.

4.3 Application of Remote Sensing for the Estimation of Evapotranspiration by INERA (Dr. Halidou Compaore)

Key Points

- This presentation was on the application of remote sensing data.
- Dr. Compaore used the estimation of evapotranspiration in the Navrongo area of Upper East-Ghana as a case study.
- He explained that land-use and land-cover change studies over savannahs are important for the energy partition at the land surface and for agricultural activities in developing countries.
- He highlighted 4 methods for estimating evapotranspiration and explained that they provide point estimates of ET and are therefore not sufficient for system-level water management.
- He demonstrated how remote sensing methods can be used instead and concludes that: 1) ET values look realistic compared to other sources; 2) the remote sensing method was able to track the ET change in the landscape.

Note: The following presentations were delivered by Dr. Tobias Landmann consecutively over Day 2 and Day 3. Below are the key points from all the presentations.

4.4 Remote Sensing and GIS Application in GVP I: Overview of Satellite Imagery/Products by GVP/DLR/University of Wurzburg (Dr. Tobias Landmann)

4.5 Remote Sensing and GIS Application in GVP II: Utility & Constraints of Satellite Data Sets for Key Hydrology and Biodiversity Applications by GVP/DLR/University of Wurzburg (Dr. Tobias Landmann)

4.6 Demonstration of Utilities in Hydro-meteorological and Biodiversity Models by GVP/DLR/University of Wurzburg (Dr. Tobias Landmann)

5.0 PRESENTATIONS (Day 3)

5.1 Satellite Data Acquisition/Download Demonstration (MODIS/Landsat) by GVP/DLR/University of Wurzburg (Dr. Tobias Landmann)

5.2 Showing the Usage and Characteristics of the GVP and BIOTA Remote Sensing Data Sets by GVP/DLR/University of Wurzburg (Dr. Tobias Landmann)

Key Points

- These presentations highlighted both the theoretical and practical aspects of remote sensing technology.
- Dr. Landmann began by explaining the basics of what remote sensing consists of and its application, then he gave an overview of satellite imagery and products that are used within the GVP and BIOTA projects.
- Following this, he discussed the utility and constraints of satellite data sets for key hydrology applications with specific reference to MODIS, which is freely available.
- In Part 4, Dr. Landmann demonstrated the theoretical use of remote sensing for hydrological applications such as wetland mapping.
- This was followed by a practical component involving the allocation of wetland spaces as in the field to the MODIS mapped wetlands.

6.0 CLOSING REMARKS/OBSERVATIONS

6.1 General Discussion

The general opinion of the workshop was very positive. Mr. Ali Jacques Garane said that the information presented was useful and that another, more intensive and longer workshop would be beneficial. A second workshop, possibly a week long, should include specific tools and practical exercises so that participants can learn more about managing their data.

Mr. Antonio Rogman added that a 2-day workshop will be organized in the near future, which will expand on his presentation for this workshop.

Dr. Dilnesaw Alamirew said that there will be some training sessions in the near future on water management and scenario analysis. These sessions will be designed specifically for certain organizations but some of them will be broader and open to everyone interested in attending. He said that 3-4 workshops are being planned and that participants will be notified of the details upon confirmation.

One participant thanked the organizers of the workshop and said that he learned a lot about the MODIS tool for data management and found it particularly useful. He hopes that developing countries will make use of such tools.

Dr. Dilnesaw Alamirew said that due to climate change, there is variability in rainfall. The MM5 model has been used to evaluate these changes, and a workshop will be organized to share the results of this research. Dr. Barnabas Amisigo added that this training workshop will be technical and hands-on; it will involve a lot of modeling. Therefore, people and organizations with modeling knowledge and capabilities are encouraged to attend. He asked the group to let the organizers know if anyone has the background and would like to attend this workshop.

A participant asked when the CDs with the presentations will become available for everyone. Dr. Dilnesaw Alamirew replied saying that they will be available in about a month, most likely at the VBA in Ouagadougou.

Mr. Ali Jacques Garane said that the Direction de la Meteorologie du Burkina Faso is very interested in the next workshop on WASIM and will be attending. He also wanted to know if any workshops have been planned with local universities by UNU-INRA or the University of Wurzburg. He said that this would be beneficial as technology transfer and knowledge sharing is needed at the university level. Dr. Tobias Landmann responded saying that such a workshop has not been planned yet; however, it is a possibility (maybe in 2008-2009). It is a decision that would be made by the project's steering committee, so it would help if the Direction de la Meteorologie du Burkina Faso or a local university formulated a request to that effect that can be passed on to the steering committee.

6.2 Chairman's Closing Remarks

On behalf of all the participants, Mr. Ali Jacques Garane closed the workshop by thanking the GVP/UNU-INRA staff (Dr. Dilnesaw Alamirew and Dr. Barnabas Amisigo) for organizing the workshop and DGRE for hosting the workshop.

Dr. Dilnesaw Alamirew thanked the participants on behalf of the GVP. He said that the workshop was two-way learning and that participants learned from each other. He hopes that there are similar opportunities in the future.

The workshop was then officially closed and everyone gathered for lunch.

7.0 INCLUSIONS & APPENDICES

7.1 Workshop Agenda

Schedule

Data Management and Application of GIS and Remote Sensing in Natural Resources Management Training Workshop

Dates: Wednesday, December 12 – Friday, December 14, 2007

Venue: Direction Générale des Ressources en Eau (DGRE), Ouaga 2000
Ouagadougou, Burkina Faso

Chairman,

Dr. Barry Boubacar (IWMI/ Coordinator , GVP)

Day 1, Wednesday, December 12, 2007

- 08:00 Arrival of Guests, Registration, Distribution of Program Materials
- 09:00 Formal Opening of Meeting
Dr. Barry Boubacar (IWMI/ Coordinator , GVP)
- 09:10 Introduction of Workshop Activities
Dr. Dilnesaw Alamirew (GVP/UNU-INRA)
- 09:20 Meteorological data collection, storage and management by Direction de la
Météorologie du Burkina Faso
Mr. GARANE Ali Jacques (Chef Service Climatologie, Burkina Faso)
- 10:00 Discussion
- 10:20 Coffee Break
- 10:40 Hydrological data collection, storage and management by Direction des Etudes et
de l'Information sur l'Eau (DEIE)
(Madame Jacqueline ZOUNGRANA (Directrice DEIE))
- 11:00 Discussion
- 11:20 Hydro-Meteorological data collection, storage and management by GVP
(GVP)
- 12:00 Discussion
- 12:30 Lunch
- 13:30 Presentation on Dealing with missing data
Dr. Barnabas A. Amisigo (GVP/WRI/UNU-INRA)
- 13:50 Discussion

- 14:10 Demonstration on Dealing with missing data

Dr. Barnabas A. Amisigo (GVP/WRI/UNU-INRA)

14:40 Coffee Break

15:00 Gestion de l'Information géographique au Burkina
Mr. Claude Obin TAPSOBA (Directeur Général, IGB)

15 :30 Utilisation des SIG pour la détermination des zones à risque
environnemental et social élevé .
Mr. Abdoulaye Bélem, (Directeur technique, IGB)

16 :30 Suivi spatio temporel des changements d'occupation des terres au
Burkina,
Mr. Bako Ferdinand, Cadre en Géoinformation).

17 :00 Discussions

17:30 End of Day 1

Day 2, Thursday, December 13, 2007

08:45 Data Infrastructure and Data Management in the GLOWA Volta Project
Mr. Antonio Rogman (ZEF/GVP)

10:45 Coffee Break

11:05 Application of GIS under GVP and in BIOTA Africa
Mr. Antonio Rogman (ZEF/GVP), Dr. Dilnesaw Alamirew(GVP/UNU),
Dr.- Tobias Landmann (DLR/Uni-Wuerzburg)

12:20 Application of Remote Sensing for the Estimation of Evapotranspiration
Dr. Halidou Compaore (INERA)

12:40 Discussions

13:10 Lunch

14:10 Remote sensing and GIS application in GVP I: Overview of satellite
imagery/products
Dr. Tobias Landmann (GVP/DLR/University of Würzburg)

15:10 Coffee break

15:30 Remote sensing and GIS application in GVP II: Utility & constraints of satellite
data sets for key hydrology and biodiversity applications
Dr. Tobias Landmann (GVP/DLR/University of Wuerzburg)

16:30 Demonstration of utilities in hydro-meteorological and biodiversity models
Dr. Tobias Landmann (GVP/DLR/University of Wuerzburg)

17:30 End of Day 2

Day 3, Friday, December 14, 2007

09:00 Satellite Data acquisition/download Demonstration (MODIS, Landsat)
(edcims: www.cr.usgs.gov/pub/imswelcome)
Dr. Tobias Landmann (GVP/DLR/University of Wuerzburg)

10:30 Coffee Break

11:00 Showing the usage and characteristics of the GVP and BIOTA remote sensing data sets
Dr. Tobias Landmann (GVP/DLR/University of Wuerzburg)

12:50 General Discussions

13:10 Closing Remarks

13:30 Lunch and End of Day 3

7.2 ZEF/GVP's Questionnaire for Workshop Participants

QUESTIONNAIRE DE DONNEES GLOWA VOLTA

Afin d'avoir une meilleure compréhension de votre situation actuelle dans la gestion des données (relatives à l'actuel GVP ou les activités de gestion de l'eau) nous voudrions vous demander de nous donner un bref aperçu de votre environnement de travail par rapport aux données et à leur gestion en remplissant le présent questionnaire. Présentement, nous n'avons pas besoin d'une analyse détaillée, donc des réponses précises seront appropriées. Le questionnaire est conçu pour être rempli en 20 minutes. Si vous n'êtes pas en mesure de répondre à une des questions, sautez-le s'il vous plaît ou demandez-moi l'aide.

Merci pour votre coopération

Antonio Rogmann, Data Management Team - GLOWA Volta Project
Accra, 13.12.07

Informations Personnelles

Nom :

Fonction :

Email / Téléphone (bureau) :

Informations professionnelles

Votre Institution / Organisation

Quelles sont vos principales préoccupations et priorités dans le secteur des ressources en eau ?

Quels sont les thèmes/problèmes actuels avec lesquels vous travaillez personnellement?

À quelles les institutions partenaire êtes-vous plus rattachés dans votre travail quotidien ?

Les données / le Logiciel / les flux de Données

Les données

Quel est le contenu thématique des données que vous ou votre équipe utilisez? Spécifiez si possible

- Les données hydrologiques (par ex. : décharges)
- Les données Météorologiques (par ex. : les précipitations)
- Les données sur l'Économie (par ex. les marchés agricoles) :
- Les données sur la Sociologie (par ex. la démographie) :
- Données de SIG (par ex. la couverture de terrain, l'utilisation de terrain)
- Autres :.....

Vous ou votre organisation fait-elle la collecte directe des données ou d'un observatoire ?

- Oui
- Non

Logiciels

Quels logiciels (outils spécialisés ou système de simulation) utilisez-vous ?

ArcView (Version 3.0 - 3.3)

ArcSIG (version 8.0-9.2).....

Bureau ArcSIG, Lizenz

- ArcView
- ArcEditor
- ArcInfo

GRASS

WEAP

EXCEL

Système de simulation de données comme WaSIM

Autre logiciels SIG

Autres logiciels

Si vous utilisez la version ArcView 3.0-3.3 du logiciel SIG de l'ESRI, projetez-vous de changer en bureau ArcSIG (signifie ArcView 8.0 et plus performant) ?

Non

Oui, dans : 6 mois année prochaine pas précis

Avez-vous besoin d'échanger (importer/exporter) quelques données/renseignements entre ces systèmes/instruments pour la réalisation de votre travail ?

Quelle thématique de données doit être échangée ?

Combien de données seront échangées ? (Le volume, XXX Ko ou les Mégaoctets, Gbytes)

Est-il nécessaire de transformer certaines données ? Par exemple, les conversions du format ou des recalculs

Quelles applications utilisez-vous pour faire ces transformations ?

Traitez-vous / analysez-vous / visualisez-vous les données ?

Avec quels types de données travaillez-vous ?

- les données spatiales (les vecteurs, les trames)
- les Données avec la mesure temporelle / la série de temps
- les mesures d'information, mesures statistiques (qualitatif, quantitatif)
- Autres
- Quelles méthodes utilisez-vous pour l'analyse de données ?
- Traitement informatique de données statistiques (par ex. la corrélation)
- Visualisation et exploration visuelle
- Quelle type de visualisation / méthodes visuelles utilisez-vous ?
- Autres

Quelles méthodes d'analytique / de visualisation sont souhaitées, mais manquent ou ne conviennent pas à l'utilisation des instruments avec lesquels vous travaillez ?

- Comment décrivez-vous et préservez-vous les résultats de votre analyse ?
 - o descriptions textuelles
 - o tables de Résumé
 - o graphiques et organigrammes
 - o autres
- A qui présentez-vous vos résultats d'analyse de données ?
 - o aux collègues

- aux experts de Domaine qui ne sont pas directement impliqués dans la collaboration (par ex. contrôleurs de projet)
- les fonctionnaires
- autres

Les flux de données

D'où recevez-vous/recueillez-vous d'habitude vos données (les institutions / les organisations) ?

Comment les données vous parviennent-elles ? ?

- par e-mail
- par CD/DVD envoyé poste
- par le téléchargement d'un serveur, géré par :
- personnellement collectées
- autres :

Partagez-vous régulièrement des données à l'extérieur de votre propre département (par ex. les productions modèles, les propres mesures) ?

- Si oui, à qui ?

Si oui, quel type de données partagez-vous surtout pour :

- les thèmes/sujets (par ex. les renvoi de mesures, pollution de l'eau, la demande d'eau, ...)
- traitement de statut (par ex. les données brutes, les données traitées/évaluées.)

Comment diffusez-vous les données ?

- par e-mail
- par CD/DVD envoyé par poste
- transfert à un serveur, géré par :
- les données doivent être apportées personnellement
- d'autres :

Comment est votre connexion Internet au travail ? (<ou quelque chose comme ça>)

- quelle est sa vitesse ?
 - 100Mbit LAN ou mieux
 - 10Mbit LAN
 - 400-1600Kbit DSL
 - ISDN
 - le Modem analogique
- Y a-t-il des limites ?
 - Flatrate ou connexion limitée à temps ou sur le trafic

- Quel est son coût ?
 - o Prix par minute/ volume de transfert
- Est-il sûr ?
 - o Suspend parfois votre connexion ? si oui, à quelle fréquence ?

Quand vous cherchez des données (nouvelles), comment obtenez-vous l'information des sources ou des pourvoyeurs ?

- les sources de données sont connues
- en demandant aux collègues ou aux institutions partenaires
- en utilisant un inventaire de données qui est géré par
- en utilisant de l'équipement de recherche dans Internet
- en cherchant dans les bases de données de meta dans Internet, gérées par
- autres :.....

Manquez-vous des données qui nécessaires pour vos activités en cours ou pour celles à venir ? Si oui, lesquelles ?

L'Administration de Données (les Normes)

Comment les données sont-elles conservées dans votre département ?

- chaque chercheur fait conserver ses données localement sur son ordinateur
- une base de données fait partie du réseau intérieur
 - o dans un système de fichiers
 - o dans une base de données relationnelle. Le système de gestion de base de données (si connu) :
- sur les médiums de données externes (CD, DVD, ...)
- autres :
- Votre Département / Organisation maintient-elle un inventaire ou une base de données de meta indexant des données disponibles ?
- base de données de meta
- catalogue
 - o numérique
 - o sur papier

Si vous (votre organisation) gérez une base de données meta, quel système de gestion de base de données (par ex. MS Access) et norme de méta données utilisez-vous ?

À quel(s) problème (s) concernant l'utilisation de données faites-vous face ?

- Il est difficile d'obtenir les données voulues par rapport
 - o au pourvoyeur
 - o la qualité de données
 - o le contenu et les formats de données
 - o l'usage des droits / les prix
 - o le logiciel (les versions) des données ont été traitées
 - o autres

- Il est difficile de recevoir un ensemble de données exigé par rapport
 - o à l'accès aux données
 - o à la qualité de données (les trous, les données manquantes, valeurs fausses/imprécises ...)
 - o formats
 - o autres :

Manipulez-vous des données avec les droits d'auteurs réservés ?

- o oui
- o non
- o partiellement

Avez-vous un gestionnaire exclusif de données / l'administrateur dans votre département ? (Si oui, donnez s'il vous plaît son nom et son adresse)

Merci pour votre coopération !!!

8.3 List of Participants and Contact Information

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