

GLOWA-VOLTA PROJECT (GVP)

Report of the training workshop

ON

“GLOWA-Volta Project Hydro-
meteorological decision support for the
Volta Basin”

ORGANISED BY

**UNITED NATIONS UNIVERSITY (UNU)-
INSTITUTE FOR NATURAL RESOURCES IN
AFRICA (INRA) &
CENTRE FOR DEVELOPMENT RESEARCH (ZEF),
UNI-BONN**

AT

UNU-INRA Seminar Room, LEGON

FROM

14th to 17th January 2008



1. Introduction/ Objectives (What was the workshop?)

The training will cover the following topics

(a) **Model based water balance estimations**

- Training in water balance simulation model WaSiM
- Climate change scenario studies

(b) **Predicting the Onset of the Rainy Season**

- Training in specific statistical approaches Linear discriminant analysis and Linear Regression Analysis

2. Where workshop was held? Period of workshop

The training workshop was held at the UNU-INRA Seminar Room (ISSER Building), University of Ghana, Legon, Accra from 14 to 17 of January 2008

3. Attendance

The invited institutes, which are listed below are mainly from research and data gathering institutes but some institutions from water management and regulating bodies were also invited.

1	Water Resources Commission
2	Water Research Institute
3	Savanna Agricultural Research Institute
4	Soil Research Institute
5	Institute for Mathematical Sciences
6	Center for African Wetlands
7	Environmental Protection Agency
8	Ghana Meteorological Agency
9	KNUST-Civil Engineering Department
10	Hydrological Service Department
11	Ministry of Water Resources, Works and Housing (Water Directorate)
12	KNUST-Geography Department



About 19 persons attended this training workshop.

4. Opening

The training workshop was opened at 9:00 am with a welcome and an introductory speech by the Director of UNU-INRA, Professor Dr. Karl Harmsen

Highlights of his speech are:

- the need to estimate the components of hydrological cycle of the basin using a distributed model for a rational water management.
- the need to study the impact of climate change scenario on the water resources in the basin.
- the need to estimate the onset of rainy season in order to avoid a risk of crop failure and to adopt different strategy in order to cope up with the changing of onset of rainy season
- he mentioned that this training would address above-mentioned needs by giving hands-on training on the application of model based water balance estimations using WASiM and on the predicting of the Onset of the Rainy Season **using two** statistical approaches Linear discriminant analysis and Linear Regression Analysis

Finally he wished all participants a good and successful training workshop

The workshop was chaired by Dr. Dilnesaw Alamirew (UNU-INRA/ GVP) and by Sven Wagner and Patrick Laux (Institute for Meteorology and Climatology IMK-IFU).

5. Workshop sessions

The training workshop was held in two main sessions over the four days. The first session dealt with the following points:

- Introduction and overall objective of the training course
- Theoretical introduction to a) definition of the onset of the rainy season (ORS), b) regionalization c) Linear Discriminant Analysis LDA
- Practical exercises with the programming environment MATLAB
- Application of the LDA for predicting the ORS
- Introduction to Linear Regression Analysis LRA
- Application of LRA for predicting the ORS using MATLAB

In the second session the following three topics were handled

- o Introduction to model based water balance estimations and to hydrological model WaSiM
- o Setup and first exercise with WaSiM
- o Using different meteorological input data sources for WaSiM: a) MM5 results b) TRMM data, c) station data
- o WaSiM simulations with MM5, TRMM and station data

After the second session was over Dr. Dilnesaw gave an introduction about GIS based hydrological model SWAT (Soil and Water Assessment Tool) and showed how to run SWAT model and the results he got from his research work on one of Ethiopian river basin Upper Awash.

6. Closing

Dr. Dilnesaw thanked the instructors for their effort to transfer the knowledge they generated and the tools they used. And also he thanked the participants for their active participation.

The meeting was closed by 4 Pm.

7. List of Participants and Contact Information during WASIM and Onset of rainy season training

	Name	Organization	E-mail	Phone number
1	Samuel Nortey	Institute of Mathematical Sciences	ssamnot@yahoo.com	0246145490
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GLOWA-Volta workshop: Accra 14.01.-17.01.2008

Hydro-meteorological decision support for the Volta Basin Venue: UNU_INRA Seminar Room

DAY 1		DAY 2		DAY 3		DAY 4	
8:30-9:00	Registration	9:00-10:00	Introduction to Linear Regression Analysis LRA	9:00-10:00	Introduction to model based water balance estimations and to hydrological model WaSiM	9:00-10:00	Using different meteorological input data sources for WaSiM: a) MM5 results b) TRMM data, c) station data
9:00-9:30	Formal Opening of the Training by Prof. Karl Harmsen (The Director of UNU-INRA)						
9:30-10:00	Coffee Break and Group Photo & Set up of Participants Laptops						
10:00 - 12:00	- Introduction and overall objective of the training course - Theoretical introduction to a) definition of the onset of the rainy season (ORS), b) regionalization c) Linear Discriminant Analysis LDA	10:00-10:30	Coffee Break	10:00-10:30	Coffee Break	10:00-10:30	Coffee Break
		10:30-12:00	Introduction to Linear Regression Analysis LRA	10:30-12:00	Introduction to model based water balance estimations and to hydrological model WaSiM	10:30-12:00	Using different meteorological input data sources for WaSiM: a) MM5 results b) TRMM data, c) station data
12:00-1300	Lunch	12:00-1300	Lunch	12:00-1300	Lunch	12:00-1300	Lunch
13:00 - 15:00	- Practical exercises with the programming environment MATLAB - Application of the LDA for predicting the ORS	13:00-15:00	Application of LRA for predicting the ORS using MATLAB	13:00-15:00	Setup and first exercise with WaSiM	13:00-15:00	WaSiM simulations with MM5, TRMM and station data
15:00-15:30	Coffee Break	15:00-15:30	Coffee Break	15:00-15:30	Coffee Break	15:00-15:30	Coffee Break

15:30-17:00	Discussion and Practical exercises	15:30-17:00	Discussion and Practical exercises	15:30-17:00	- Discussion of: (a) consequences of climate change scenarios for water management in Ghana and Burkina Faso; (b) framework for current estimations of water availability and distribution - Final Discussion
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