A Report for Training Course in
Geoportal Database Building and Dashboard for Better Agricultural Data
Management, 1-5 August 2021, Khartoum, Sudan
Report by Eltaib Ganawa

1. Executive Summary

Along with their on-going efforts to promote the training sector and as one of their main areas of focus, the project management conducted and arrange training course for 5 days in Geographical information System (GIS), R software and Geoportal database building and Dashboard design for the agricultural database management as part of the Developing Methodologies and Capacity for Monitoring Climate Change and its Impacts on Agriculture in Sudan through Earth Observation project. The training course took place in Khartoum during the period 1-5 August 2021. The training aiming at creating common understanding about basic and Application of Geographical Information System (GIS) with emphasize on database building and mainly on the preparations of dataset relevant to ministry of agriculture and other partners such as Sudanese Metrological Authority, Remote Sensing Authority, Ministry of animal resources (Department of range land and forage) activities and projects. The training course was attended by 15 participants representing mainly the ministry of Agriculture (Department of Planning and Agricultural Economics, IT and other) staff from different departments mentioned above; see the (Annex 1).

The training course focused on a) General Introduction to GIS, b) Core principles of GIS components, c) Theory on how to work with R software as the tools for spatial statistic, d)working with the data collected from different sources and used in the GIS platform, and e) working with the query of the data, f) layout of the data, g) working with the Geonode, h) working with the internet GIS and mapping, i) working with uploading and downloading the data from the Geoportal, J) Training focus on the data sharing and integration between the different sector of the Ministry of agriculture and other organization.

By the end of the course, the candidates given a Internet GIS and I cloud ISO Evaluation Sheet to recorded their views and remarks about the course. The evaluation indicated that participants are very satisfied with the training course in terms of contents, facilitator's performance, training approaches used, training venue, and services provided (Annex 2).

This document is a report of the training course in terms of objectives, time schedule, facilitators, participants, contents, course proceedings, and evaluation results. By the end of the course the participants had given a CD including all covered materials.

2. Training Course Proceedings:

2.1 DAY 1 Proceedings

Session 1: Opening the workshop

The workshop opened with Holy Quran followed by welcoming speeches by Dr Mahasin Mohamed (General Director of the Administration of the Planning and Agricultural Economic from the Ministry of Agriculture and Dr. Eltaib Saeed Ganawa, National expert of Dashboard and data base management, the focal point of CTCN Miss Huyam Ahmed (From HCENR) spoke to the audience and also Dr Arig Bakheit from NDC Partnership, and finally the participants introduced their self to enable to know each other.

After the welcome, the presentation started with an Introductory lecture on the following topics:

1. Introduction to the Developing Methodologies and Capacity for Monitoring Climate Change and its Impacts on Agriculture in Sudan through Earth Observation project. The needs of this training for the staff from different organization
2. Objectives of the projects
3. The Role of the partners in the projects
4. Concept of the GIS and the open source QGIS as the main tools of GIS works.
5. The R software (Theory of the Spatial Statistics)
6. The relationship between the I Cloud and the partners of the project

Session 2: Introduction to Geographical information System

This session focused mainly on introduction to Geographical Information, Definition and Concepts of GIS and GIS, Geographical data, Coordinate systems and map projection, the concept of GIS data Models such as different between the Raster and Vector data Models, information about the GIS coordinates systems and the GIS data management. How to working with the GIS data and formatting the data for better standardization procedure, also the relationship between the GIS and Internet.

Session 2: Introduction to QGIS software
This session started by introduction to QGIS software. The main features, menus, commands, functions and windows. The tour of the QGIS to understand the feature

Session 3: Getting Started With QGIS
-Start QGIS and Building data and feature of geographic data.
- working with the database, creation of new files in the QGIS.
- Managing a dataset.
- Working with database and the attribute tables.

This session started by continuing on working with the introduction to GIS software (QGIS). The main features are menus, commands, display, function, windows, rules and the viewer for the data preparation and building the database.

2.2 DAY 2 Proceedings

Session 1: Introduction to the GIS and Geoportal

This session focused on data query and working with attributes table, data transformation and data conversion. Also the following topics were covered:

i.   The method of linking the data with the remote sensing data

ii.   'Remote sensing principles and differences to the GIS

Session 2: working with the QGIS continue

The lab work covered the following topics:
i.   *Working with the attribute data*
ii.   *Working with the remote sensing data (satellite images)*
iii.   *Loading the data in the Google earth and Bing data*
iv.   *Methods of uploading the data in the QGIS from different data format*

Session 3: Lab

- working with the map layout
- Theory of the basic of the cartography, including the basic concepts of the maps elements.
- Understanding the map composition and map layout with purposes of the map
- Working with the software and prepare the map layout
- Insertion of All map elements
- Conversion of the data (map format) to different formats.

Session 4:

- Practical work on the following:
  o Advance data exchange and sharing with different organization and
  o Standardization of the data in one format.

2.4 DAY 3 Proceedings
Session 1: Introduction to the I Cloud

- Definition of the I Cloud, concept and objectives
- Design of the I cloud, Architecture and the components of the I Cloud
- Internet GIS (Definition and components)
- Web GIS Definition, uses and its relation to the CRFP

Session 2: working with the components of the I Cloud

This session focused on the Geonode Software:

- Tour on the components of the Geonode
- Installation of the software, working with the Geonode Online, understanding the functions and tools.

- Working with the GeoServer
- GIS database architecture and management

2.5 DAY 4

Session 1: Lab (this task focus on the application of the Web GIS in the I Cloud)
- The Data uploading in the Geonode (this task focus on working with the participants data, which created during the GIS working on the QGIS software.
- Data Downloading and working with the methods of how to download the data.
- Working on the data accessibility and how to make the accessible of the data
- Creation of the login and administrator
- Teaching of the how to work with the Metadata, this task will help know the sources of the data

Session 2: working the data management, web GIS data management
Session 3: Implementations of the methods of the data sharing and data

Day 5:
Session 1: This session focus on continue working with the following:
- Working with data downloading and uploading
- Changing of the symbology of the data
- Sharing the data within the group
- Concept of the Metadata and the structure

Session2: the Practical and work on Geoportal platform
- Practical working on the data from different organizations
- Organization of the data for

The Closing Session:
The closing session included the following activities:

- Speech by Miss Nora Khan Salih, Project Coordinator (SUDAN), General Administration of Planning and Agricultural Economics, Ministry of Agriculture.

- Speech by Dr Sawsan Mohamed, General Administration of Planning and Agricultural Economics, Ministry of Agriculture.

- Speech by Dr Eltaib Ganawa (course coordinator, National Consultant of the Data management)

- Speech by the Participant's.

- Distribution of workshop attendance certificates

3. Course Evaluation:

By the end of the course, the participants were given a Quality management Questionnaire to put their remarks upon the course tutoring, materials and catering. The overall remarks are Very Good.

Appendix 1: list   of Participants

No	Name	Organization
1	Mohamed Awad Allah Albadawi Alsheake	Sudanese Meteorological Authority (SMA)
2	Esra Edrees AbdallahElamin	Higher Council of Enviornement and Natural Resources (HCENR)

3	EsraaNasr Eldin Abas Jacksa	Ministry of Agriculture, dept of Planning and Agricultural Economics
4	Gawahir Siddig Salim Abashar	Ministry of Agriculture
5	Omnia Omer Daffelseed Hamed	Remote Sensing Authority
6	Hanaa Hashim Salih Babiker	Ministry of Agriculture
7	Sahar Mohammed Elmubark Alzubair	National Centre of Information (NCI)
8	Mona Ali Mohammed Alameen	Ministry of Agriculture
9	Esraa Elshafi Mudawi Elshafi	Ministry of Agriculture
10	Awaitf Ibrahim Ahmed Mohamed	Ministry of Agriculture
11	Nihal Hassan Elhaje Ibrahim	Ministry of Agriculture
12	Hisham Mohammed Osman AL Hussein	Ministry of Agriculture
13	Waleed Fath Alrahman Mohammed Khairy	Ministry of Animal Resources (Range Land and Forage Department)
14	Amna Ahmed Mohammed Bashir	Higher Council of Enviornement and Natural Resources (HCENR)
15	Mesoud AbdelBagi	University of Khartoum

List of Instructors

ID	Name	Specialization	Organization
1	Dr Eltaib Saeed Ganawa	RS/GIS	University of Khartoum/National Expert
2	Dr Abdel Rahim Abdel Motaleb	Spatial Statistics	King Faisal University/ Saudi Arabia
3	Fatharahman Yousif	Geoinformatics	Future University
4	Fatima Awad Allah	Remote Sensing/GIS	Future University
5	Adam Ibrahim Ahmed	Geoinformatics	UNOPS