

**A Report for Training Course in
Introductory Remote Sensing and Geographical Information System (GIS)
for the FNC Participants funded by REDD+**



**Prepared by:
College of Forestry and Range Science
Sudan University and Science and Technology**

**19 – 26 August 2017
Soba – Khartoum - Sudan**

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1. Executive Summary

Along with their on-going efforts to promote the training sector and as one of their main areas of focus, Forest National Corporation (FNC) contracted the College of Forestry and Range Science in collaboration with College of Geoinformatics, Future University to arrange and deliver a 7 days training course in Introductory Remote Sensing and Geographical information System (GIS) . The training course took place in Soba at the College of Forestry and Range Science and Future University during the period 19th to 27 August 2017. The training aiming at creating common understanding about Application of Remote Sensing (RS) and Geographical Information System (GIS) with emphasize on natural resources applications. The training course was attended by 27 participants representing various stakeholders groups at locality levels (Anne 1).

The training course focused on a) General Introduction to Remote Sensing, b) Core principles of Electromagnetic Radiation, c) Application Image processing, Classification and layout using ERDAS Imagine 14 and ArcGIS 10.3 Software, and d) Introduction to Remote Sensing & Earth Observation, e) Introduction to Remote Sensing Applications for Fire Management, f) General Introduction to Tour d'horizon: ArcGIS 10.3 and ArcCatalog; Data Exploring and Editing, g) RS, GIS and GPS integration and data download, h) Working with forest management using GIS (Annex 2).

By the end of the course, the candidates given an RS/GIS 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 contents, facilitators performance, training approaches used, training venue, and services provided (Annex 3).

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 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. Mahgoub Suleiman Mohamedain, Dean the College of Forestry and Range Science – Sudan University of Science and Technology. Dr. Sayda Khalil, Coordinator of REED+ Project - Forest National Corporation (FNC) and Dr. Eltaib Saeed Ganawa, Dean Faculty of Geoinformatics, Future University. Following the formal opening, participants introduced their self to enable to know each other.



Session 2: General Introduction to Remote Sensing

This session covered definition of remote sensing, RS concept and terms, RS scale and platform, types of remote sensing and examples of RS.

Session 3: Introduction to the RS software

This session started by introduction to RS software (ERDAS Imagine 14). The main feature, menus, commands, display, function, windows, rules and the viewer.

2.2 DAY 2 Proceedings

Session 1: Core principles of Electromagnetic Radiation

This session focused on solar radiation, wave and practical models of radiation and region of Electromagnetic Radiation (EMR) spectrum.

Session 2: Application of Remote sensing in Natural resources

The presentation covered image enhancement, analysis of target reflectance with regards natural resources, vegetation indices and image classification.

Session 3: Lab

- Image metadata and Coordinate system
- Link/Unlink Viewers
- Image manipulation

2.3 DAY 3 Proceedings

Session 1 & 2: Introduction to Remote Sensing Applications for Fire Management

Session 3:Lab

- working with satellite images from MODIS data which contain a lot of information about the NDVI

Create image subset

- Spectral characteristics, Spatial and Surface profiles tests

2.4 DAY 4 Proceedings

Session 1: Elements of Visual Image Interpretation with Emphasize on Natural Resources

The session focused mainly on Digital image processing theory and concept, Image interpretation and Analysis of Satellite Data and Visual Interpretation.

Session 2: Lab

- Measurement and Analysis of target Reflectance with regard natural resources
- Image classification- Unsupervised

Session 3:Lab (Raster GIS and map Composition

- Create and Edit Raster Map
- Add Annotations and Remarks

2.5 DAY 5 Proceedings

Session 1: 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. concept of GIS data Models. GIS coordinate systems. GIS data management.

Session 2: Introduction to the Arcmap and ArcCatalogue software

This session started by introduction to Arcmap software. The main feature, menus, commands, function and windows.

Session 3: Getting Started With ArcCatalog

-Start ArcCatalog and Building a catalog of geographic data.

- working with the Geodatabase, creation of new files Geodatabase.

- Managing a dataset.

- Working with metadata.

2.5 DAY 6 Proceedings

Session 1: Integration GIS data with Remote sensing data

Session 2: The nature of Geographical Information System

This session focused on GIS system, Map production, Fire management, Harvesting planning, Resources management and GIS Application.

Session 3: Lab

- Creating layers for your geodatabase

- Creating a Topology

2.5 DAY 7 Proceedings

Session 1 &2: Manipulating data and layout in ArcGIS

Session 3: Download free satellite

The Closing Session:

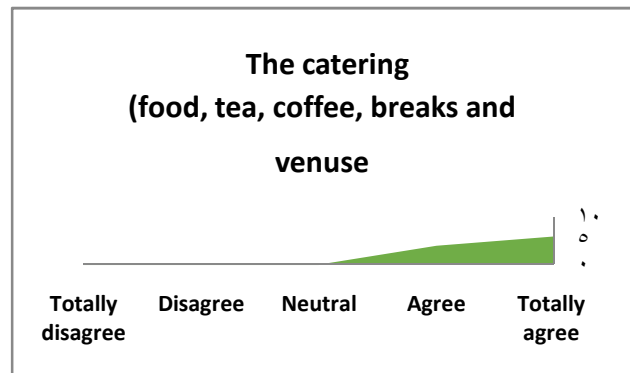
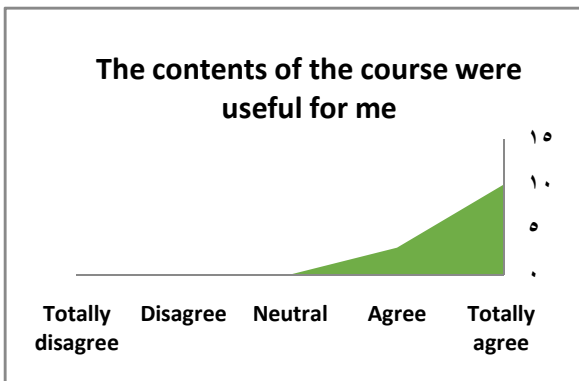
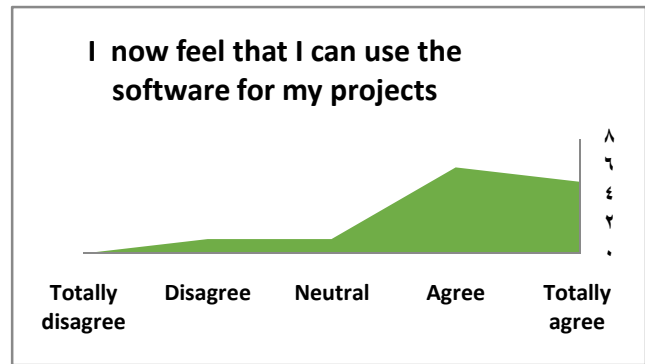
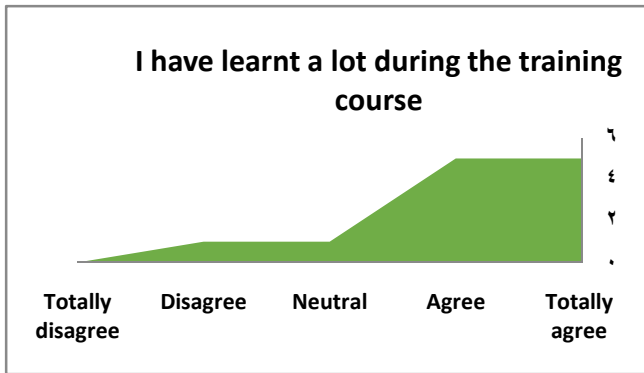
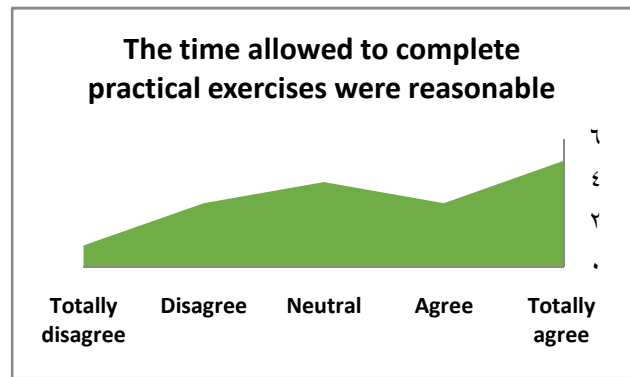
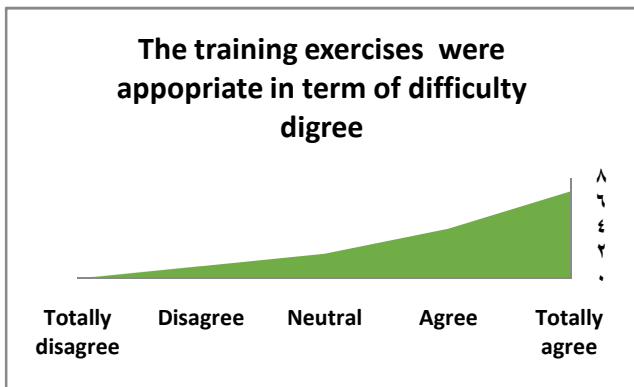
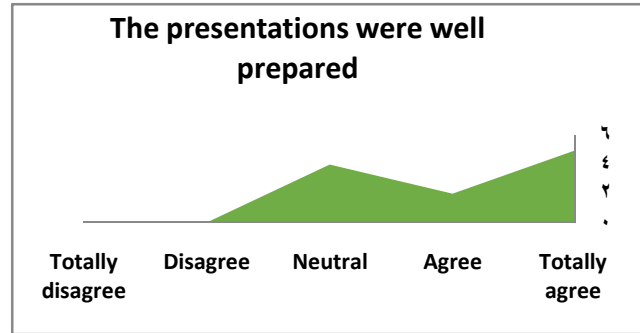
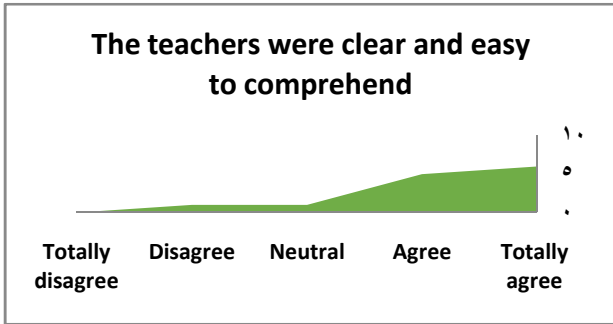
The closing session included the following activities:

- Speech by Alsahel Training Centre (FNC)
- Speech by Dean the College of Forestry and Range Science – Sudan University of Science and Technology
- Speech by Dean Faculty of Geoinformatics, Future University
- Speech by representative of training course participants
- Distribution of workshop attendance certificates
- Distribution of workshop tutors and organizers 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 (figures bellow & Annex 3).

Figures of Training Evolution

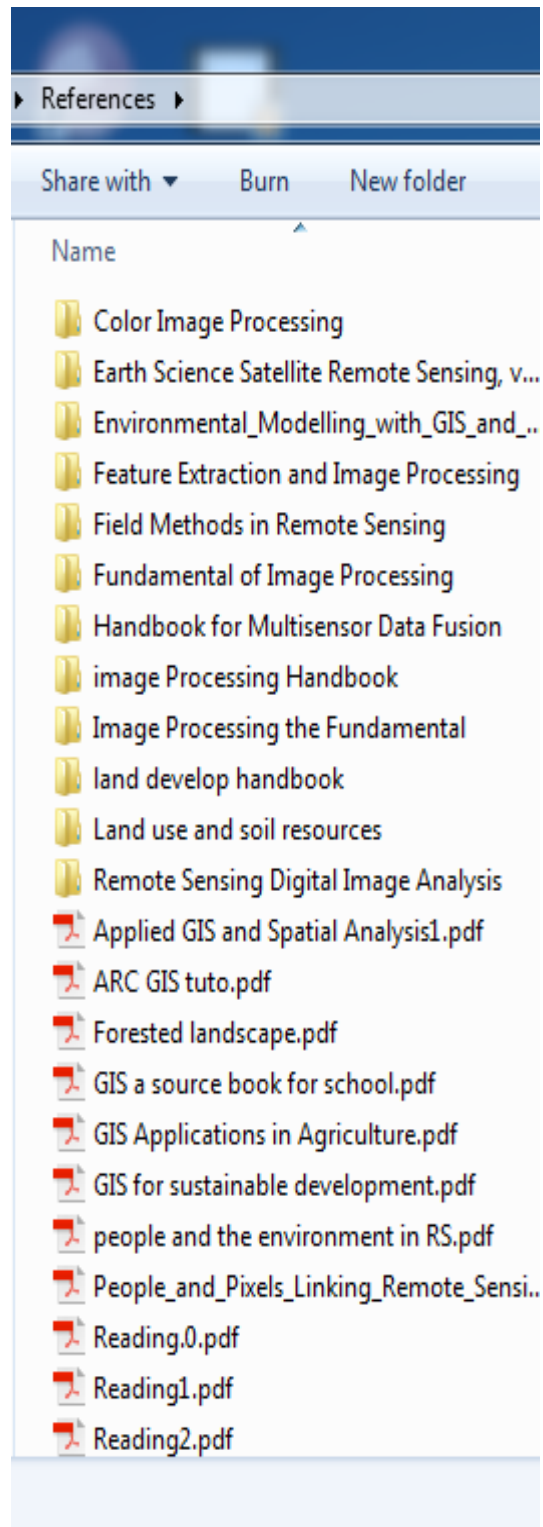
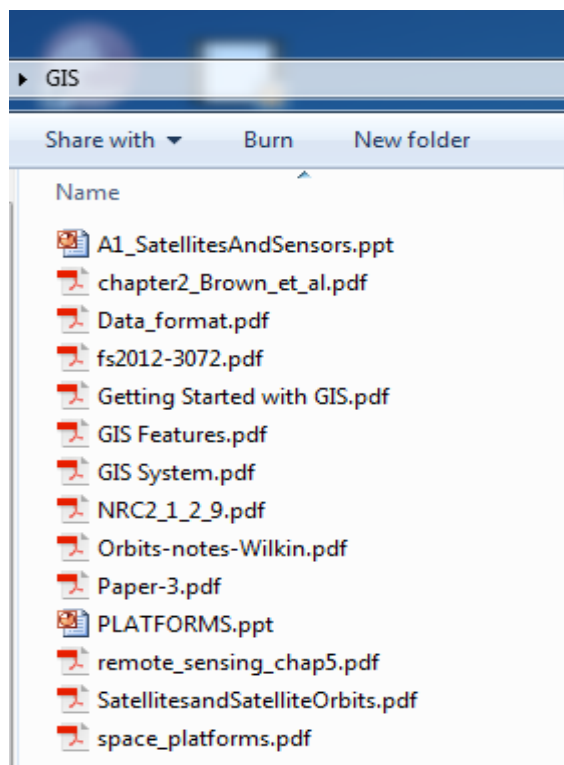
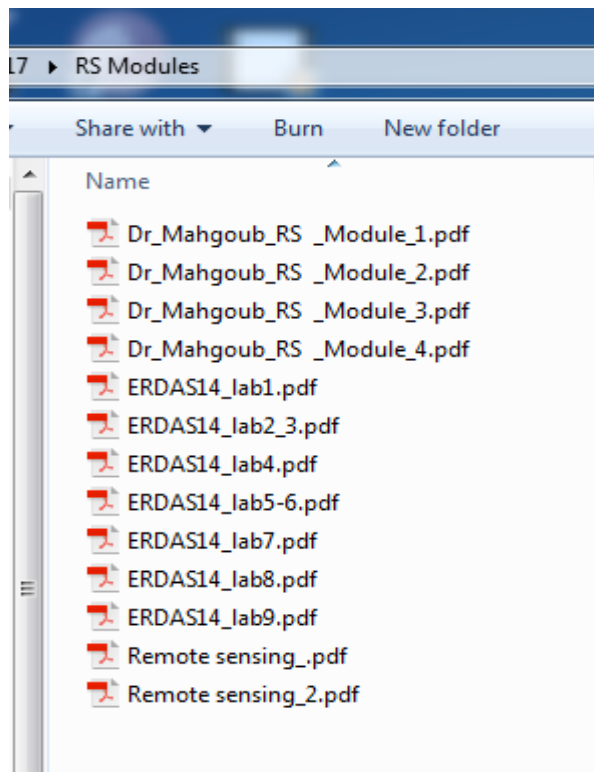


Annex 1:List of participants

No.	Name	Institute	State
1.	Osman Ajeel Omar Derar	Forest National Corporation (FNC)	Red Sea
2.	Fatima Siddig Elhadi Mohamed	Range & Pasture ministratation	Khartoum
3.	Noha Hassan Abdalla Hamad	Forest National Corporation (FNC)	Khartoum
4.	Mona Ahmed Suleiman Mohammed	Forest National Corporation (FNC)	Khartoum
5.	Mohammed Abdelrahman Mohammed Arabi	Forest National Corporation (FNC)	Kassala
6.	Hussien Elballa Ali Elballa	Forest National Corporation (FNC)	Gazira
7.	Salah Saleh Suliman	Forest National Corporation (FNC)	Central Darfur
8.	Abdelbagi Elsiddig Yousif Babiker	Forest National Corporation (FNC)	Gadarif
9.	Hamza Abdulhameed Idriss Ishag	Forest National Corporation (FNC)	North Darfur
10.	Tarig Ali Elhag Karama	Forest National Corporation (FNC)	West Darfur
11.	Fahmy Ibrahim Boshara Mohamed	Forest National Corporation (FNC)	White Nile
12.	Manahel Mohammed Ahmed Mohammed	Ministry of Agricultural & Forestry	Khartoum
13.	Ahmed Yahay Ali Yahay	Forest National Corporation (FNC)	Blue Nile
14.	Khalid Hamad Mohammed Fadul	Forest National Corporation (FNC)	West kordufan
15.	Rania Aldoma Ali Ahmed	Forest National Corporation (FNC)	Sows Darfur
16.	Ali Abaker Ali Abdelrahman	Forest National Corporation (FNC)	East Darfur
17.	Nazar Hassan Omer Gaber	Forest National Corporation (FNC)	Sinnar
18.	Elfatih Ali Musa Dimo	Forest National Corporation (FNC)	North Kordofan
19.	Ebtihal Khadir Sheakh Edries Mohammed	Forest National Corporation (FNC)	Khartoum
20.	Alshafee Ahmed Abdelraheem Mohammed Khair	Forest National Corporation (FNC)	River Nile
21.	Salma Abuelfatah Musa Elalim	Forest National Corporation (FNC)	Khartoum
22.	Isra Moamoon Siddig Ahmed	Forest National Corporation (FNC)	Khartoum
23.	Lana Mohammed Abdalhadi Abdalgader	Forest National Corporation (FNC)	Khartoum
24.	Yousif Adam Mohammed Ahmed	Forest National Corporation (FNC)	South Kordofan
25.	Nuha Imam Mhmoud Mohmmed	Forest National Corporation (FNC)	Khartoum
26.	Fatima Mohamed AltahirEid	Forest National Corporation (FNC)	Khartoum
27.	Mona Hussien Hamad	Forest National Corporation (FNC)	Khartoum

Annex 2: Training Course Modules (the complete modules in the attached CD)

By the end of the training course, participants given a CD including RS and GIS materials plus several references as shown below.



Annex 3: Training Course Sheet *(Evaluation sheets included in the CD attached)*

RS /GIS Training Course Quality Management Sheet				
Introductory Remote Sensing and Geographical Information System (GIS) Quality Management				
	totally disagree			totally agree
a. The Training Course				
The teachers were clear and easy to comprehend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The speed of the presentations were good	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The presentations were well prepared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The examples presented were well chosen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The training exercises were appropriate in term of difficulty digree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The time allowed to complete practical exercises were reasonable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Questioned asked were comperhensively and clearly answered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The course participants were actively involved	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have learnt a lot during the training course	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I now feel that I can use the software for my projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The contents of the course were useful for me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. The catering (food, tea, coffee, breaks and venuse)				
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Recoomendations (if any)				
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.....				
.....				
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Annex 4: Training Photos

