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
A Report for Training Course in
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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 (Annex 1).


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 plate form, 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 ArcCatalog 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
- 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

The teachers were clear and easy to comprehend

The presentations were well prepared

The training exercises were appropriate in term of difficulty degree

The time allowed to complete practical exercises were reasonable

I have learnt a lot during the training course

I now feel that I can use the software for my projects

The contents of the course were useful for me

The catering (food, tea, coffee, breaks and venue)
## Annex 1: List of participants

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Institute</th>
<th>State</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Osman Ajejel Omar Derar</td>
<td>Forest National Corporation (FNC)</td>
<td>Red Sea</td>
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<tr>
<td>2.</td>
<td>Fatima Siddig Elhadi Mohamed</td>
<td>Range &amp; Pasture ministration</td>
<td>Khartoum</td>
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<td>3.</td>
<td>Noha Hassan Abdalla Hamad</td>
<td>Forest National Corporation (FNC)</td>
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<td>Mona Ahmed Suleiman Mohammed</td>
<td>Forest National Corporation (FNC)</td>
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<td>5.</td>
<td>Mohammed Abdelrahman Mohammed Arabi</td>
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<td>Kassala</td>
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<td>6.</td>
<td>Hussien Elballa Ali Elballa</td>
<td>Forest National Corporation (FNC)</td>
<td>Gazira</td>
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<td>7.</td>
<td>Salah Saleh Suliman</td>
<td>Forest National Corporation (FNC)</td>
<td>Central Darfur</td>
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<td>8.</td>
<td>Abdelbagi Elsiddig Yousif Babiker</td>
<td>Forest National Corporation (FNC)</td>
<td>Gadarif</td>
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<td>9.</td>
<td>Hamza Abdulhameed Idriss Ishag</td>
<td>Forest National Corporation (FNC)</td>
<td>North Darfur</td>
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<td>12.</td>
<td>Manahel Mohammed Ahmed Mohammed</td>
<td>Ministry of Agricultural &amp; Forestry</td>
<td>Khartoum</td>
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<td>Khalid Hamad Mohammed Fadul</td>
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<td>Ebtihal Khadir Sheakh Edries Mohammed</td>
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<td>Khartoum</td>
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<td>Alshafee Ahmed Abdelraheem Mohammed Khair</td>
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<td>River Nile</td>
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<td>21.</td>
<td>Salma Abueffatah Musa Elalim</td>
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<td>27.</td>
<td>Mona Hussien Hamad</td>
<td>Forest National Corporation (FNC)</td>
<td>Khartoum</td>
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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

a. The Training Course

The teachers were clear and easy to comprehend
The speed of the presentations were good
The presentations were well prepared
The examples presented were well chosen
The training exercises were appropriate in term of difficulty degree
The time allowed to complete practical exercises were reasonable
Question asked were comprehensively and clearly answered
The course participants were actively involved
I have learnt a lot during the training course
I now feel that I can use the software for my projects
The contents of the course were useful for me

b. The catering (food, tea, coffee, breaks and venue)

C. Recommendations (if any)

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Annex 4: Training Photos