



**PHASE 1_1ST SESSION ARCGIS TRAINING AT KU GIS LABS:
INTRODUCTION TO GIS: EXPLORING ARCCATALOG AND ARCGIS TOOLS
1ST SESSION REPORT: 11TH – 13TH JUNE 2014
SCHOOL OF ENVIRONMENTAL STUDIES COMPUTER LAB**

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Introduction: ArcGIS Training at KU

Following the award to Kenyatta University (KU) of the ArcGIS Enterprise License that accessible to all the students and staff campus-wide KU embarked on a sensitization process to IMPLEMENT THE USE OF KU-ESRI-ARCGIS CAMPUS-WIDE LICENSE. The award of the license was through a collateral agreement signed via an MoU signed between ESRI Eastern Africa and Kenyatta University and supported by ESRI under the 100 African Universities Programme, an award equivalent to USD 100,000.

To enable KU staff and students effectively and maximally use the ESRI ArcGIS software, it became necessary to have the presence of ArcGIS proficient technicians in the ArcGIS computer labs. In this regard, and in cognizance of the technical support required in the ArcGIS Labs and as a short term measure KU allowed the recruitment of two (2) ArcGIS proficient Interns for a period of six (6) months. The two (2) ArcGIS proficient Interns are supported by the CERNVec Project; a joint project between ICIPE, KU, Ministry of Health and JKUAT where Dr. Dan Masiga of ICIPE is the PI and in which 3 KU staff are participant. The presence ArcGIS Technician enabled KU to jumpstart a series of training organized in two phases:



- **Phase 1**, a 3 day introduction to ArcGIS and Remote Sensing Basics (software exploration)
- **Phase 2** a 5 day ArcGIS and Remote Sensing Applications (Practice)

The following training report gives an overview of the first of such trainings at Kenyatta University and that provided a platform for staff to explore and use the Tools available in ArcCatalog and ArcGIS (mainly ArcMap).

The 1st ArcGIS introduction training at KU: Participants going through the concept of GIS

Day 1



The training started on the 11th of June 2014 as scheduled. The registered members of staff who turned for the training were introduced to the objective of the training. The training had targeted mainly the staff population at Kenyatta University. 75% of the participants were staff members but nevertheless a few students, mainly post graduate students (25%) registered for the training. Pre-evaluation forms were given to the participant to fill. The pre-evaluation was aimed at assessing:

1. How they came to know about the training. 17% of the participant responded through networking, 28% through website and 55 % through emails
2. Which Esri product they have used. Majority of the respondents (58%) reported having not used any of the GIS software and this gave further evidence for the need of this training.
3. What they would like to learn most from a list of choices and what is their expectations at the end of the training. Majority of the participants (36%) came to the training so that they could use the knowledge garnered to complement their teaching skills. This demonstrates a need for further training to all academic staff members in the university.

Objectives

The main objective of the training is to teach the participant how to use ArcGIS as a tool for GIS. The other objectives aimed at introducing the participant to:

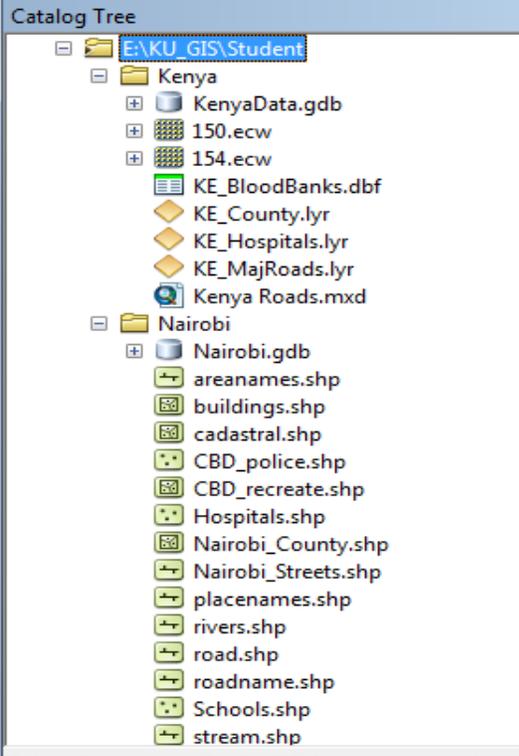
- i. What is GIS
- ii. What is ArcGIS
- iii. What can ArcGIS do

This was achieved through an overview of what is GIS, how it is related with our Environment, that GIS is not for specific type of people but for all professionals. The introduction of what is ArcGIS was aimed at bring out to the participants the difference between GIS and ArcGIS. Participant were therefore prepared to what approach will be taken to make them appreciate ArcGIS as a tool for GIS and demystify the belief that ArcGIS is a complicated tool to use.



Low uptake of the use of ArcGIS software has necessitated the confiners of the training to come up with the best approach to teach the participant how to start off with ArcGIS on their own and in a very simple way that is approachable to people who never had any training of ArcGIS software.

In this training, after the concept of GIS was introduced to the participant, the teaching approach that was adopted for the ArcGIS software was to train using slides that are actually prepared with data pre-copied to the computers they were using. The copied Student folder contained two folders as shown in Figure 1. Each folder contained different datasets that are aimed at training the student to handle data of all types. The participants were given time to explore the content of the folders and compare the ArcCatalog Data Exploration and the windows Explorer (Figure 2).

 <p>Folder Connection (E:\KU_GIS\Student) selected</p>	
<p><i>Figure 1: Student Folder Contents</i></p>	<p><i>Figure 2: Explaining to one of the trainees the folder content exploration using ArcCatalog</i></p>

The flow of the training combined the doing and the explanation in a step by step approach. This approach was adopted because in most of the cases when a new technology is introduced to the



users, the biggest challenge is usually how to start using the software and how to navigate using the available manuals. Manuals that are general to the end users sometimes do not consider the very basic concern of people who are not exposed to the technology at the lowest level. This thus put off those who are not technologically oriented and the challenge being common to all developing countries.

In the first day of training, the basic explanations of Esri Arcline of tools; ArcCatalog, ArcMap, ArcGlobe, ArcScene, ArcTool boxes and ArcReader were mentioned to the participant. ArcCatalog was taught from start menu, program files, ArcGIS path to show the participant where the software is installed in their computers. This basic approach gave the participants exposure of the path to follow suppose there are no shortcuts created or they use computers different from their own. Extensive explanation of the ArcCatalog was given and participant used their computers to open the ArcCatalog and connect to the Student folder containing the pre-copied data. Figure 1 above shows a folder connection session in a Catalog Tree captured during the training.

The next step introduced ArcMap using the same approach and participant shown the similarities and difference of the ArcMap as the main working environment and the ArcCatalog. This culminated with doing some exercise to start ArcMap on their computers, to locate the ArcTool box and closing the software. This ascertained that the student can be able to start the ArcMap program on any computer even when no shortcuts are created on the desktops. Figure 3 shows a screen shot of the training session.

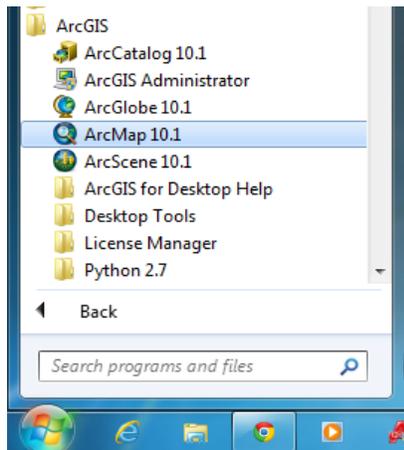


Figure 3: Starting ArcMap 10.1 from the Start.

Day 2

Day two was a link up of the first day but geared to have more exercise that opened a lot of explanations to the type of data, the ArcTool box, the data conversion and data projection.

A map preparation and presentation closed the afternoon. Participants were taken through the process as they do it on their computers to come up with a map. A map of Nairobi from the Students folder was used for the exercise. Students were shown how to add data from the connected folder into a blank data view in ArcMap. Projection of the name layer was used to project the data from WGS84 Geographic coordinates to UTM Arc 1960 projected system. Attribute table was explained in details and used to produce a report. Data Layout view was explained as participant prepared their map and the insertion of map objects (North arrow, Scale bar, Scale, legend, etc) made the whole training enjoyable. Each participant prepared his/her Nairobi map and inserted ownership text and exported the map to a pdf format (Figure 3). This proved to the participants that indeed they can use the software to produce their own map which can communicate to the intended map user.



Figure 3: A session in the GIS lab with students creating map layers o Kenya Population with their county highlighted

Day 3

Day three started off with a summary of what was done in day two to bring the participant up to speed with what they were taught. A new data set of the county population stored in the Kenyadata Geodatabase, different from what they used for preparing a map was used to expound more on the map objects and how to edit and place them in the layout view. Data management tool box was explored further and feature analysis tool box using extract tool was used to extract a county from the counties data set.

This exercise was used to give the student a hands-on training in the actual extraction of a feature from feature data set. This allowed the training demonstrate the power of ArcMap in data analysis and presentation. Another map of the extracted county layer was prepared using the same procedure as in day two. Participants were shown how to insert different picture into their maps to communicate more using one set of a map.



The afternoon session closed the three day training with introduction to Remote Sensed data. Satellite imageries pre-copied to the Student folder in the computers were used to explain how different bands record different set of data according to reflecting wavelength. The student were taken through the exercise of adding each band and explained what is contained in it. This was done by asking them what they could see reflected more. Knowledge of the data by Prof. Onywere guided the class to understand the reflections from Earth surface objects (features) and how they are represented in the satellite sensors (the Bands) e.g. the Aberdare forest, the Limuru tea zone, the Kitengela-Athi plains, the Wetlands etc showed specific reflections in specific bands. A combination of all the bands in a stack layer (Figure 3) was used to generate a coloured map to mimic the natural colors as identified by the class.

This was aimed at exposing the student to Remote Sensing as a set of data source for GIS. Students appreciated the power in data acquired by satellite as they could see on their screens areas they are familiar with. An exploration of a 0.5 m high resolution image from Quick Bird, 2013 closed the training. Participants appreciated the differences between high and medium resolution images and also the difference coverage in term of Area.

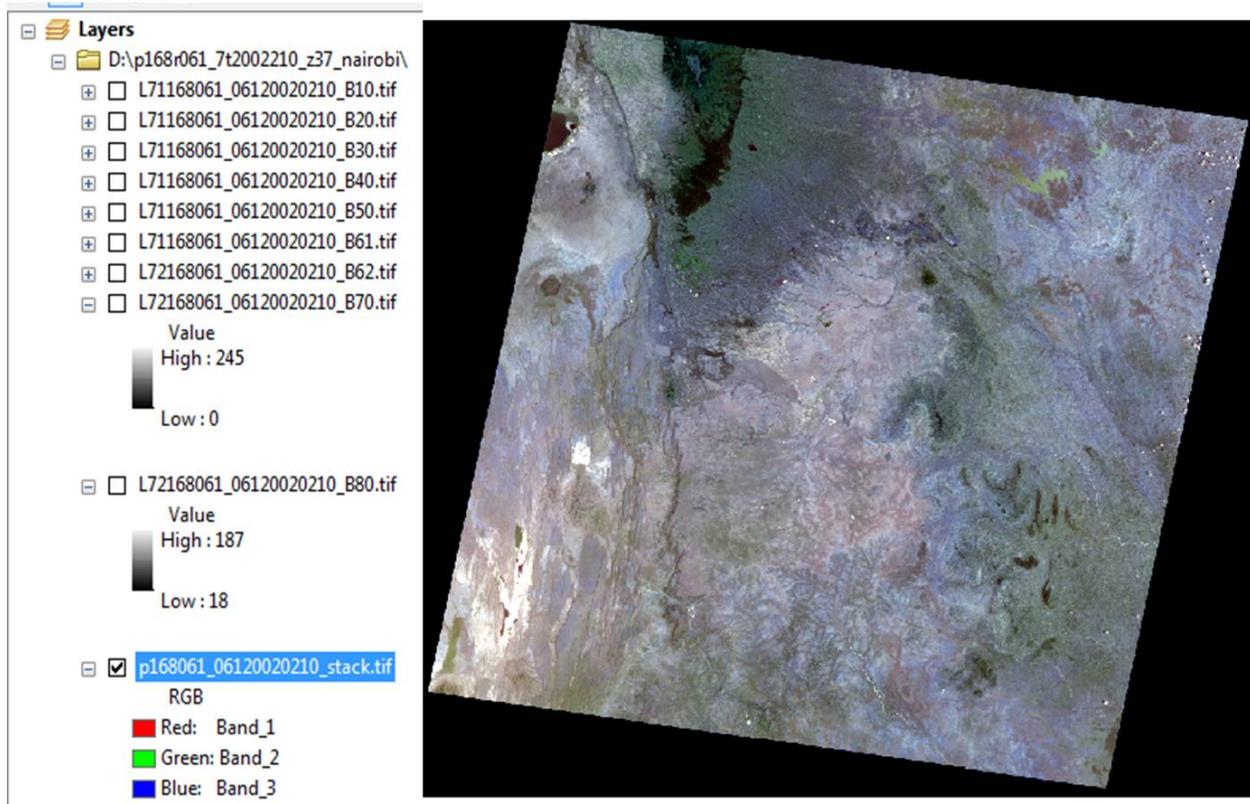


Figure 2: Remote Sensed Data

A video clip of the Remote sensing training session was also captured and is available on the website together with the photos taken on the other training sessions.

Post training Evaluation

Post-evaluation forms were filled and participants encouraged to continue using the GIS Lab to practice what they were taught until they come back for the Phase 2 training of application in July. The aim of the Post evaluation was to gauge the overall rating of the training:

1. How the student can be able to apply what they were taught. Over 55% of the respondent indicated they could apply all what was trained.
2. Would you recommend this training to others? 100% yes
 - Did the course meet your expectations? 100% yes
 - The course material was 100% clearly presented



- Will you attend phase II of the training? 100% yes
3. Item liked most during the training. Practical based scored 55 %.