

ACTIVITY REPORT

Activity: ARCGIS IT Training
Financed by: Organization of American States (OAS)
Focal Group: All ACT Suriname staff concerned with land management or otherwise interested
Execution: Wesley Pacheco of ACT Brazil
Date: August 29 – September 6, 2006

OBJECTIVES

A multi-session ARCGIS IT training workshop was organized in order to bring ACT Suriname employees up to date with ARCVIEW 9.1 software. The knowledge gained will be applied when the updated cultural maps of the Trio and Wayanas are produced.

COORDINATION

Activities were coordinated by Wesley Pacheco of the ACT Brazil staff.

PARTICIPANTS

Participants from ACT-Suriname were:

- R. Bong A Jan (Land Management Coordinator)
- M. Uiterloo (Health Program Coordinator)
- S. Lisse (Operations Manager)
- M. Weidum (Financial Administrator Assistant)

Also participating was the consultant G. Halfide.

AGENDA

August 29

Mr. Pacheco began by asking the participants what they wanted to learn from him. The participants asked what the work method is in progressing from collecting crude field information in the form of waypoints all the way to the generation of a map.

He commenced by explaining that it was first necessary to upload collected information from the GPS units onto computers using Trackmaker software. He added that it is very important to make and keep a copy of the file in its original state, because that information is irreplaceable. An important step is the deletion of unnecessary waypoints, tracks, and routes.

After saving the file in .gmt format, the file then should be saved in .txt format. The information in the file (with .txt format) must be processed and presented properly in order for use with ArcMap software. The next step is to open the text file in Microsoft Excel. The data must be edited in a specific way, and organized in columns and rows. After editing, the document should be saved in .dbf format, because only .dbf-formatted files can be opened in ArcMap. When opening ArcMap, you can import data that was saved in files with a .dbf extension.

August 30

After a review of the data in Excel, it appeared that some of the waypoints were duplicated 30 to 40 times. In order to resolve this problem, adjustments had to be made to the data by using the filtering tool. First, a validation test was carried out in order to determine whether some of the data indeed had been duplicated; it turned out that almost all measured waypoints had been duplicated and thus had to be filtered out of the file. The unnecessary data was removed, and the file was saved again in .dbf format.

Next, the participants were shown how data collected in the field can be imported and displayed in ArcMap. After a brief explanation of the layout of ArcMap, the file was saved with an .mxd extension.

Additionally, Mr. Pacheco gave a presentation of the various ArcGis software applications available (e.g. ArcView, ArcEditor and ArcInfo) and their uses. He also discussed the way these different applications can be combined.

August 31

Mr. Pacheco explained that when three-dimensional data is displayed in a two-dimensional format, a mathematical model must be used in order to correctly display the data. The several locations on the Earth's surface must be linked to the center of the earth (through mathematical models) in order to calculate their correct location on a map, which is a two-dimensional format. Because the Earth's surface is very irregular (it contains peaks and valleys), several mathematical models are used.

He explained a few technical geographical terms such as types of projections used (stereographic, transverse mercator), and types of datums used in the production of maps (Zanderij datum, WGS_1984 Bessel etc.). The differences between geoids, ellipsoids and the earth's surface were also explained. Mr. Pacheco stressed that for the GPS data collected in the field, the world datum 'WGS_1984' is automatically selected. It is important to ensure that the data collected in the field matches the type of projection used in the maps to prevent deformations in the data display.

Longitude, latitude and polar coordinates were explained.

Mr. Pacheco stated that the ideal projection methods for Suriname are either the cylindrical or the stereographic projection methods, and he provided an in-depth explanation of both. He argued that these methods were better because of the geographical location of Suriname on Earth: because Suriname is located near the equator, there is a smaller change of deformations showing up on the map when a stereographic or cylinder projection method is used. Another important point is that to increase precision, one must correctly select parameters such as original latitude and longitude, scale factor etc. For Suriname, we use either a Suriname Transverse Mercator projection (SURTM) or a stereographic (Stereo 1933) projection.

Additionally, an explanation was provided regarding the difference between a Universal Transverse Mercator projection method and the SURTM projection, namely that of the central fuse meridian.

The day concluded with a task for the group: in ArcCatalog, the participants had to prepare a new map by creating dataframes and shape files. The objective of this exercise was to demonstrate to the participants that one must make sure that the dataframe and layers contain the same projection method.

September 1

Mr. Pacheco discussed the attributes of tables and, particularly the way in which data can be displayed in tables (datatype properties were discussed). He explained the structure of tables, which consist of rows (with records) and columns (with fields), as well as the several datatypes, e.g. short and long integer, float, and double.

The session was continued with discussions regarding shape files and layer files.

The identical task as the day before was presented. The participants created a new dataframe with a specific projected and geographic coordinate system. This task helped the group understand how to transform, modify, select and create new coordinate systems.

The final topic of the day was a demonstration of how data can be displayed or indicated differently by changing the symbols used in the map.

September 2

Mr. Pacheco explained how to analyze data, including the use of statistical formulas, as well as how to display data on a map by using different symbol styles and sizes, and how to import symbols or how to create one's own.

He discussed the proper layout of a map, including the various components (legend, scale bar, north arrow etc.) that must be included so that viewers can correctly read and understand the map.

Mr. Pacheco also taught the participants how to save maps in order to use them as templates in the future. The group was given the task of creating a new map with the following items: scale bar, north arrow, legend, different routes (waypoints indicated with different symbols), and title.

The group also learned about placing grids on a map, including grid types and grid intervals.

September 3

The day's primary subject was the ArcCatalog application, including how to create a geodatabase, feature classes, types of feature classes, and shape files. Also explained was the management of the various folders (containing shape files, geodatabases, etc.). Mr. Pacheco explained the differences between Access and ArcCatalog, namely the fact that people can add data into an Access database without having to know anything about ArcGis, but in a geodatabase, much more additional information is available than in Access.

September 4

ACT Suriname had obtained digital images of the Trio lands and wanted to know how to link the data collected in the field (in the form of waypoints) with the digital images. The training session was continued with instructions on how to calculate coordinates (latitude and longitude in different metric systems) while using a catalog provided by the governmental cartographic institution CBL. Mr. Pacheco showed the participants how to upload the images into ArcMap and how to create a single dataframe containing both the images and the collected field data; the two must have coordinate systems that corroborate. It took some time for the group to determine the proper projected and geographic system as well as the correct parameters.

The next important subject was geo-referencing. When uploading images, the participants discovered that the grids from the map did not match up to the border limits of the images. This meant that the participants had to add several control points to the images in order to properly place the image within the grid.

The next important step was learning how to manage the many types of folders and documents. Mr. Pacheco recommended using the following system: country name (Suriname) / village name (Kwamalasamutu-Tepu-Alalapadu) / file type name (shape file; image file; text file; .dbf file). Within the shape file folder, another division could be made into projection types (SURTM-Stereo).

September 5

The participants were given the task of geo-referencing an image and then placing the collected waypoints into that image. Additionally, several editing tools were utilized in order to add color to the rivers in the image and to indicate the river islands present in the image.

The day was spent carrying out the exercise.

September 6

On the final training day, remaining concerns were discussed. Certain steps in the mapmaking process were repeated, and the exercise of the previous day was completed.

CHALLENGES

The training exercises provided the group with a great deal of information over a short time span. Although this was a very difficult training set, especially because of the language barriers, time was allocated effectively and much was learned.

FOLLOW-UP

A more advanced follow-up training workshop in the use of ArcGis is under design, potentially to be convened in Brazil.



Wesley Pacheco leads discussion and delineates steps in the process