

## GEOREFERENCING WITH ArcGIS 10.3 OF A MAP SCALE 1:25.000

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### Abstract

*Georeferencing is a methodology for converting maps from analogue to digital vector. Graphic information can be of two types: raster or vector . Raster graphics is a way to represent imaging software Matrix pixels while vector graphics representation is a method of imaging using geometric primitives (points, segments , polygons ) , characterized by mathematical equations . For georeferencing we chose a trapeze in eight colors ,scale 1:25.000.The software we work with is ArcGis 10.3.The corners of the trapezoid will be converted from geographic coordinates in coordinates stereo 1970.*

**Key words:** georeferencing, vector, raster, ArcGIS, maps.

### INTRODUCTION

Geography Information Systems (GIS) are part of the largest class information systems treating its main feature information considering its location or spatial location, Geography, in territory coordinates.

Georeferencing requires image alignment to a coordinate system, the stage where the image becomes a form of spatial data defined by parameters such as projection and point of origin. The first consequence of this is that the map scale becomes variable: you can navigate “over” image in different “high places” controlled by the zoom factor.

### MATERIALS AND METHODS

For georeferencing we chose a trapeze in eight colors scale 1: 25.000. We work with ArcGIS software is version 10.3 Desktop. For the begin we must transform the corners of geographic coordinates in coordinate Stereo 1970. We can use several softwares transformation: TransDatRo , Toposys , Geotools , PlanServMDI , Total Transform. These applications can either turn over the keystone of geographic coordinates in coordinate stereo or points or files of points. For example with

PlanServMDI software help we can insert nomenclature of the trapeze and can be obtained directly over the keystone coordinate stereo in 1970.

### RESULTS AND DISCUSSIONS

Steps:

1. We believe that trapezium has coordinates : These coordinates will be supplied software inverse transformation (X geodetic will be noted in column Y 's mathematically ) .

	Xgeodezic	Ygeodezic
1.	350898,21	335057,25
2.	360837,51	334833,89
3.	360636,70	325575,38
4.	350683,05	325798,90

2. Make the connection to the folder where we want to work , or we want to bring our data setting "Folder Conections" and then "Conect To Folder" then press the "OK" button.

3. Then click with the mouse selecting the path that we want to bring our data that we want to work or we want to use .

4. Accessing data that we need is achieved as: Press the button in the toolbar at the top of the screen Add Date shaped sign (+).

5. Now save the project by going to File in the menu bar and then selecting Save As in our directory.

6. Now we go to View in the menu bar and then select Data Frame Properties / General / Units where the drop-down list to select Map Meters and go to the Display drop-down list putting everything Meters. Then do click with the mouse on Apply and OK. Control visualize the lower right corner of the ArcMap window on the display should go on X and Y coordinates Besides writing Meters instead of Unknown.(Figure 1).

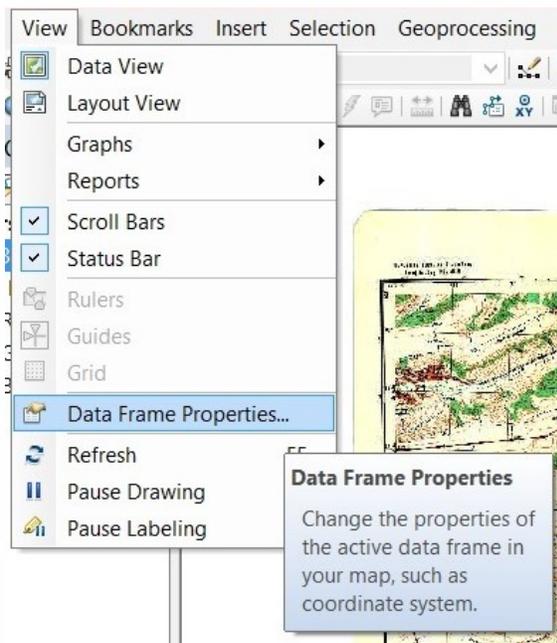


Figure 1. Data frame properties

7. Verify that appears in the main menu bar , toolbar georeferencing called georeferencing . If we do not appear in the main menu bar , go to Customize / Toolbars and select georeferencing , then drag the georeferencing in the menu bar in the area that we want . (Figure 2).

8. Zoom in on the corner of the trapeze that we want to introduce coordinates using the button in the main menu bar .

9. Now we go to the bar georeferencing Add Control Points button and go about one 's corner keystone of georeferenced , after previously we did with the + button in the menu bar a convenient zoom (Figure 3).

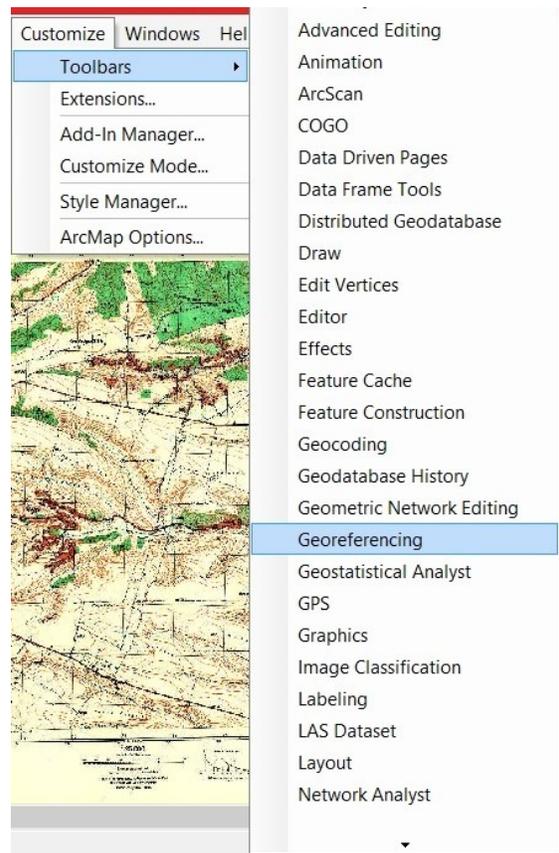


Figure 2. Georeferencing

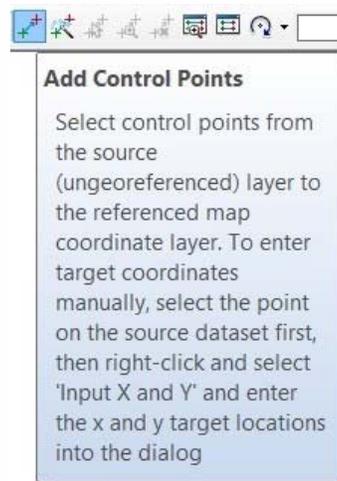


Figure 3. Add control points

10. Now we introduce the X and Y coordinates of all corners of the trapezoid ,starting with the top corner from the left and continuing clockwise order 1, 2 , 3, 4.The software transform the coordinates X and Y in reverse,the first column is Y and second column is X. Zoom with the + button in the menu bar on the corner of trepezului No.1 , and then we click with the right mouse button when

positioned at the intersection corner trapezium (upper trapezoid is given by the intersection of geographical coordinates ) and immediately without moving the mouse we click with the left and right click with right Input X , Y , passing that the entering coordinates.(Figure 4, Figure 5, Figure 6, Figure 7).



Figure 4. Point 1

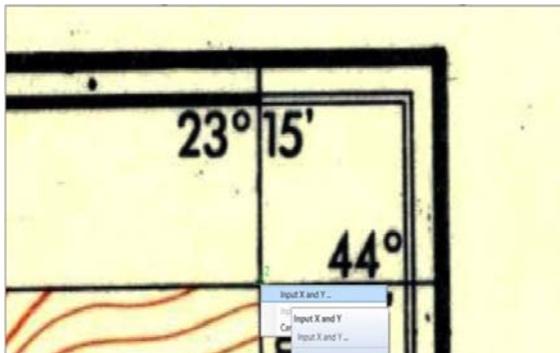


Figure 5. Point 2

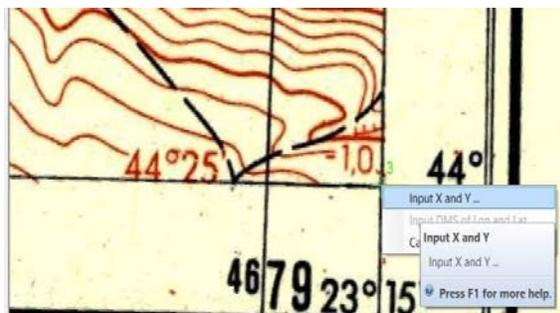


Figure 6. Point 3

11. Now visualize the whole trapeze with corresponding coordinates entered for the 4 corners of the trapezoid that we want to georeferencing (Figure 8).

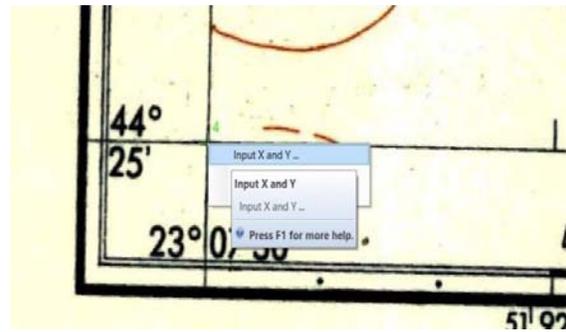


Figure 7. Point 4

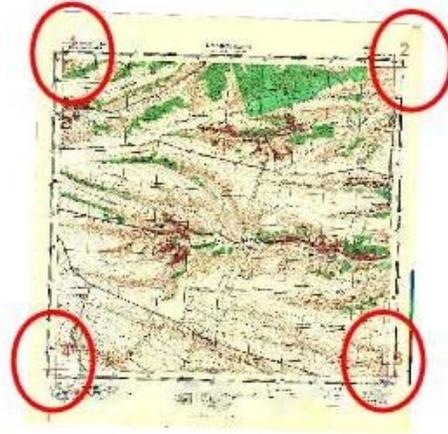


Figure 8. The whole trapeze

12. We go to the bar georeferencing , click with the mouse on View Link Table to examine the pairs of X and Y coordinates of the four corners of the trapezoid (Figure 9).

Link	X Source	Y Source	X Map	Y Map	Residual_x	Residual_y	Residual
1	338.688600	-483.873668	350888.218...	320857.250...	-4.95761	-2.84155	7.3155
2	5034.508443	-642.683691	360837.518...	334833.890...	7.26313	2.72513	7.76185
3	5082.285090	-8026.548991	360636.790...	323375.380...	-7.18238	-2.78389	7.62842
4	386.231523	-5086.792524	350683.050...	323798.900...	-11.3879	9.88427	13.0793

Figure 9. Table of coordinates

13. We have to check if we have correctly entered the 4 corners of the trapezoid that we want to referencing.

14. The trapeze is a little rotated spatially referenced and is a .tif file extension, we can recognize that it is correctly georeferenced reading every corner of the trapeze and confronting coordinates of the four corners of a trapezoid in Stereo 1970. We go to the menu

bar and save the project thus ending georeferencing (Figure 10).

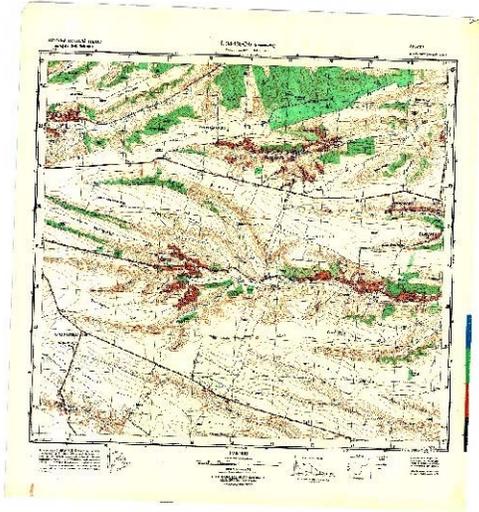


Figure 10. Final map

## CONCLUSIONS

GIS is a technical working increasingly used in the modern world both in theoretical research and in many practical activities. In fact, GIS is a system that has several components on information reported to the geographical coordinates. Entry, storage, handling and component analysis is done by computer; output of, first, the visualization of complex information spatially referenced to real geographic coordinates, and secondly, the possibility of carrying out analysis and correlations of great complexity, unachievable with classical techniques effectively.

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