Demonstration Video
Didger 3 - Part 3
Raster Projects

PART 3

1. Introduction
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1. Welcome to Golden Software's demonstration video for Didger 3 – Part 3. In this demonstration I'll be covering the topic of raster projects.

   Raster projects are a type of Didger project that allow you to import images, georeference images, warp images, and convert the projection of images. You can import images in many different raster formats such as JPG, TIF, GIF, and BMP. You can also digitize information from a calibrated image, or you can export it to a georeferenced image file to use it in other applications or import it into a vector project. Digitizing objects and exporting to a georeferenced image file will be covered in a Part 5 of this demonstration, as the process is the same for all project types.

2. Calibrating a raster image is similar to calibrating a digitizing tablet. It will require that you know at least three points on the image. You can calibrate and digitize a map, a graph, a log, or just about any digital information. For this demonstration, I will be calibrating a map.

   a. When you first open Didger, a blank project file is opened. Go to File | Import Bitmap | Into Raster Project.

   b. I select my image file and click Open.

   c. Click OK in the Bitmap Import Options dialog.

   d. In the second Bitmap Import Options, make any changes you like to the defaults and click OK.

   e. Once the image is imported, go to Image | Calibrate Image to begin the Calibration Wizard.

   f. In the Initial Calibration Settings dialog, I'm going to choose Projected Coordinates since I know the map is projected. I then choose the appropriate Category, System, and Datum. I'll also set the projection settings by clicking on the Settings button to the right and entering the new information. When I'm finished, I'll just click OK. Since I know I'll be entering the calibration points in units of latitude and longitude, I'll set my Calibration Units to Lat/Long (dec. deg) and click Next.

   g. This is where I enter in the coordinates for at least three known points on the map and assign those coordinates to locations on the image. I am going to use four points near the corners of the image as my calibration points. I click Add Point three times so I have four blank rows.

   h. I will type in a Point ID for my four points.

i. And then I will type in the coordinates of those four points in the World X and World Y columns.

j. I select the first row to calibrate that point. I want to be sure I'm very accurate at this, so I'm going to zoom in to my point on the image. I hold the Shift key down and click on the image near my first point. I'll keep clicking until I'm zoomed in enough. Then I'll release the Shift key and click the location on the image to calibrate the point. When I do that, the Source X and Y fields get filled in.

k. I select the next row and scroll the plot window to the next point on the image. I click on that location on the map.

l. I select the third row and scroll to that point on the image. And then I click on the third point to calibrate it.

m. I select the fourth row, scroll to that point, and click on it. If I make a mistake, I just have to highlight that row and click on the point again. When all my points have been entered, I just click Next.

n. The next page shows me the RMS error. This is a measure of the error in calibrating the points. The RMS error is only displayed when you calibrate using 4 or more points. Because I selected a projection, the units of the RMS error are in meters. This value is acceptable with respect to the range of my data.

o. This dialog also contains the Georeference Method. This is the mathematical transformation for converting coordinates in your project. I'll select Affine Polynomial as the Georeference Method, which is the most common method and acceptable for most data sets, and click Next.

p. Step Four contains some final calibration settings. In most cases, the defaults are fine so I just click Finish.

q. My calibration points are shown on the screen in the plot window. They won't be printed or exported, and are only shown on the screen as reference points. I'll go to View | Full Extents so I can see the full image.

3. Now that the image is calibrated, you can warp the image. Warping (also called rubber sheeting) stretches and bends the image to fit the calibration points. This corrects for any image distortion. Warping is required if you are going to eventually export the image and import it into a vector project in Didger, and it is recommended that you warp an image before converting the projection. The Image | Warp Image command is grayed out if anything is digitized in the plot window, so make sure you use this command prior to any digitizing. It is also grayed out if the image is calibrated with logarithmic axes.

   a. To warp the image, simply go to Image | Warp Image.

   b. You have many options for the Warp Method and the Resample Method. You can also set the Output Map Extents and the Output Bitmap Extents. In most cases, the defaults are fine, so you can just click OK.

   c. Once you have clicked OK in the Warp Image dialog, the calculations take place. Depending on the selected Warp Method and the size of the bitmap image, this may take awhile.

d. If the bitmap image was large, you will be asked if you want to add this object to the Undo list. If you click Yes, you will be able to go to Edit | Undo and undo the warping. If you click No, you will not be able to undo the warping. Click whichever you feel comfortable with. I'll click Yes.

e. At the end of warping, the Bitmap Import Options dialog appears. Make any changes you wish to the defaults and click OK.

4. Converting the image projection is very useful when you are trying to overlay other data on top of an image that is in a different projection, or if you are trying to mosaic two images together that are in different projections. The Image | Convert Image Projection command is grayed out if anything is digitized in the plot window, so use this command prior to any digitizing.

    a. To convert the projection of an image, first make sure that it is calibrated with a projection. If you want to double check, go to Image | Calibrate Image and make sure it is set to Projected Coordinates. Once you confirm that it is calibrated with a projection, just click Cancel.

    b. Then, go to Image | Convert Image Projection.

    c. Choose the Category, System, and Datum you want to change the bitmap projection to.

    d. If you want, you can also change the Output Map Extents, the Output Bitmap Extents, or the Resample Method.

    e. For now, I'm going to accept these defaults and click OK. Depending on the size of the bitmap, the reprojection could take a while. I'll speed up the video during the reprojection process.

    f. If the bitmap image was large, you will be asked if you want to add this object to the Undo list. I'll click Yes and the Bitmap Import Options dialog box appears. Make any changes you wish to the defaults and click OK.

    g. The bitmap in the new projection is displayed. You can export this map or digitize information on top of it. These topics will be discussed in Part 5 of this demonstration.