

## Lab 15

### Fledermaus Visualization

### Draping Geo-referenced Imagery

In this lab you will learn how to import satellite imagery into your Fledermaus project and to drape the imagery over the topography you have already created. Although there are many sources for satellite imagery, the images provided by Google Earth are both high resolution for many areas (~1m scale), and **free**. NASA also provides free Landsat imagery at 15m resolution, which is the lowest resolution imagery available in Google Earth.

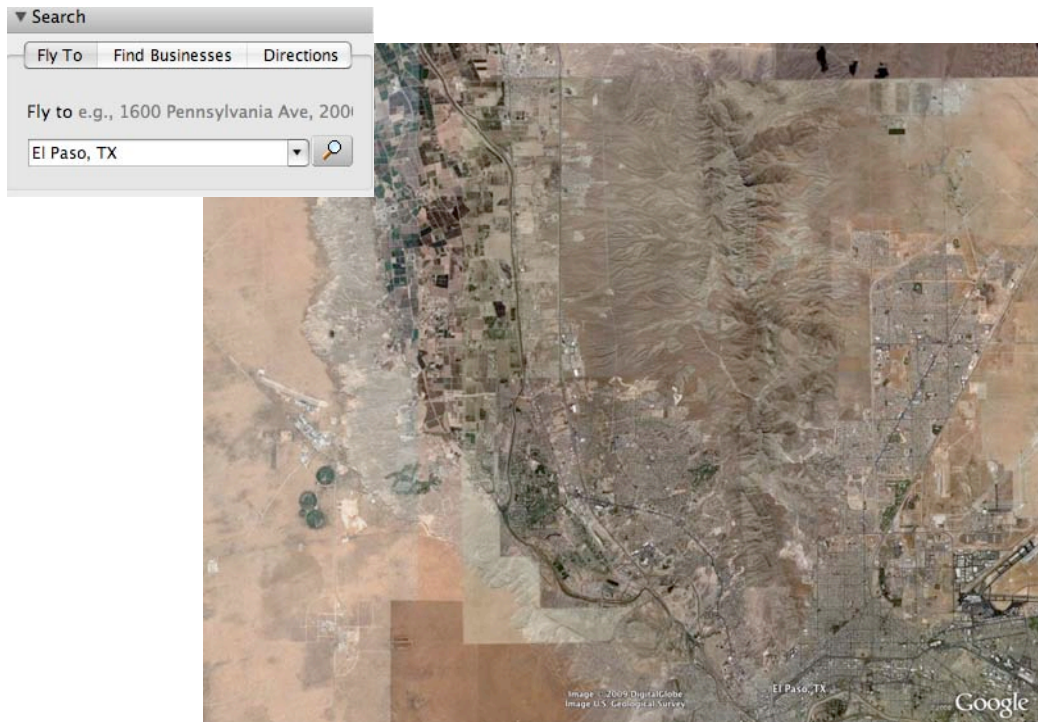
There are three steps to this process:

1. Collect your imagery from Google Earth
2. Convert imagery to .sd file using DMagic program
3. Import image-draped topography .sd file into Fledermaus

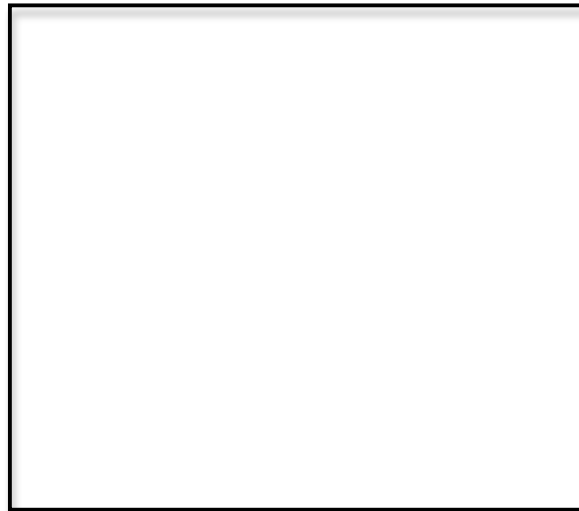
**Step 0.** Create a **Lab15** folder on your Desktop. Copy your **30N110W.dtm** and **30N110W.geo** files from your **Lab13** folder on \\geobase, into your new Lab15 folder

### Step 1. Collect your imagery from Google Earth

Open Google Earth and in the Search window, type in the El Paso, TX, and hit the search button to zoom to El Paso. Zoom to a position where you can view a substantial part of the Franklins, the river valley, and the airport on the east side of town.



- Get rid of the gray square marking the middle of your zoom by right-clicking on the square target and select **Delete**.
- If your status bar at the bottom is not displaying in decimal degrees, go to the Google Earth Preferences (go **Tools -> Options -> 3D View**) and select **Decimal Degrees**.
- *Next comes a very important step: recording the geographical coordinates of your image. You will need to write these down in the box provided below.*
  - Move the mouse pointer to the bottom, left corner, just at the edge of the window, to find the southern-most latitude and the western-most longitude. NOTE when you go outside of the window, the pointer location will give the location of the center, not the edge!
  - Move the mouse pointer to the top, right corner, just at the edge of the window, to find the northern-most latitude and the eastern-most longitude. Again, make sure the pointer is inside the window!
  - Label these two coordinate pairs on the box below. These are your Ymin/Ymax and Xmin/Xmax coordinates.



- NOTE: if Google Earth gets re-zoomed somehow, you will have to start over with this entire step.
- Now there's a few things to get rid of. In the Layers window, uncheck any layers that are checked. Turn off the **Compass** and **Status Bar** from your **View** menu bar (top).
- Now save your image with **File -> Save -> Save Image**. Select the **Screen Resolution** for now (*if you want a higher resolution, go ahead, but be prepared to work with a larger-sized file*). Name it just **El\_Paso\_Image (no suffix)** and save it to your **Lab15** folder on your Desktop. Google Earth will automatically append a **.jpg** to the end of the file.

## 2. Convert imagery to .sd file using DMagic program

- To drape Landsat/Google imagery over a Fledermaus topography scene, you must first convert the image to a .sd file. To begin, launch **DMagic** and open up a Project folder (**Open Project** → **Lab15**).
- Next import your imagery: **File** → **Import Imagery** → **Create Textured SD File**.
- **Next is the critical part: Image Boundary.** Enter the latitudes and longitudes you wrote down in Google Earth that describe the geographical extent of your image. The **latitudes** go in the **Ymin, Ymax** boxes, the **longitudes** go in the **Xmin, Xmax** boxes.
- Select the **Browse** button and navigate to your **El\_Paso\_Image.jpg** that you just saved.
- Then select **Create a new SonarDTM file from existing DTM file (.dtm)**.
- Browse for the location of your **30N110W.dtm** file in your Lab15 folder under the **Input DMT File** panel.
- Name your file **El\_Paso\_Image\_Drape.sd** under the **Output SD File** panel.
- Click **OK**.

Create Textured SD File

Image File: /Users/Bridget/Desktop/Lab15/ElPaso\_Image.jpg Browse...

Image Boundary:

X Min: -106.743179 X Max: -106.360500

Y Min: 31.750674 Y Max: 32.014811

SonarDTM File

Use Existing SonarDTM File (.sd)

Create a new SonarDTM File from existing DTM file (.dtm)

Input SD File: /Users/Bridget/Desktop/Lab15/ Browse...

Input DTM File: /Users/Bridget/Desktop/Lab15/30N110W.dtm Browse...

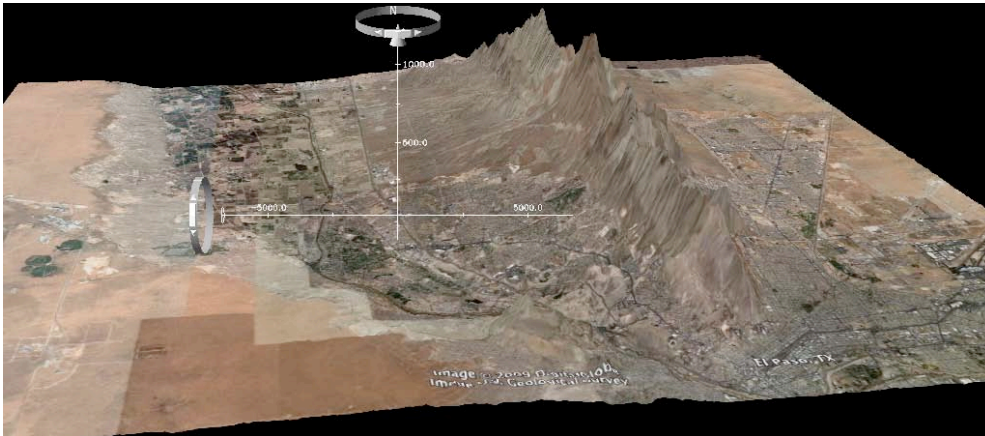
Output SD File: /Users/Bridget/Desktop/Lab15/El\_Paso\_Image\_Drape.sd Browse...

OK Cancel

- Once your **El\_Paso\_Image\_Drape.sd** file has rendered, it will appear in your DMagic **Fledermaus Objects** window.

### 3. Import image-draped topography .sd file into Fledermaus

- After DMagic has generated a new \*.sd file, select the .sd file from the **Fledermaus Objects** list and click **Run Fledermaus**.
- Fledermaus will open and display your new file. Thoroughly inspect your image-draped topography file, making sure that any topography-related features in the image are properly aligned with the actual topography. If they are not, then you probably made a mistake when recording your geographic coordinates.
- Import the local roads shapefile that you used from Lab14 and overlay this dataset. You can do in one of two ways: 1) Open your Lab14.scene file, right-click your ElPaso\_Roads.sd layer, and save (**Save Object**) to your Lab15 folder, or 2) repeat the **Import ArcGIS Shape** process as you did in Lab14. You will probably find that there are some small errors between the two datasets – this is expected considering the shortcut we took in obtaining the Google Earth imagery.
- Add one additional layer to your visualization. This can be old points, new points, a label, the regional topography .sd file you created in Lab13, etc.



### 4. Save your work

- Make sure that all of your data layers are checked and save your work to a .scene file: **File → Save Scene**. Name your file **YourNameLab15.scene** and save it to your Lab15 folder.
- Copy your entire Lab15 folder over to \\geobase. Drop your \*.scene into the **DropBox** on \\geobase.

### 5. Other stuff – GIS data resources & tips

- <http://www.maproom.psu.edu/dcw/>
- <http://sedac.ciesin.columbia.edu/data.html>

How to make a shapefile from Excel lat/long coordinates (animated demo):

- <http://www.lib.unc.edu/reference/gis/faq/xy.html>