Watershed Sciences 4930 & 6920 GEOGRAPHIC INFORMATION SYSTEMS

BLIMP LAB GEOREFERENCING BLIMP IMAGERY

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TASK 1 – SOME COMMON PROBLEMS

Georeference a blimp image with full coverage of quad to 2006 HRO

- Finding a photo with full coverage of quad
- Downloading the wrong size image from Picasa and getting a coarser resolution then 2006 HRO
- Not enough context text! Err on side of verbosity...
- Distortion.... Why does it occur and how can you improve it?







TASK 1 – Example 1 of 3



TASK 1 - Example 2 of 3

Georeferencing a Blimp Photo of the USU quad using the 2006 HRO Imagery



a) the Georeferenced Blimp Photo

b) the 2006 High Resolution (1-foot) Orthorectified Aerial Imagery

Spatial Reference: Datum: NAD 1983 Projection: UTM; Zone: 12N (in meters) Image Source: Blimp: Acquired by USU students of WATS 4930/6920 Thursday lab. group 2006 HRO: Utah GIS portal (http://gis.utah.gov/aerial) Estimated Error of Blimp rectification: Total RMSE of 0.16295 with 20 points Transformation: 3rd order polynomial

0 3 6 12 18 24



Lab3, Task1

TASK 1 - Example 3 of 3



TASK 2 – SOME COMMON PROBLEMS

Georeference same blimp image from Task 1 using total station control collected from garbage bags

- Choosing an image that although it had full coverage of quad was too oblique
- Didn't report rectification errors (clearly enough or at all)
- No comment on qualitative goodness of fit
- No grid shown... Not recognizing assumed coordinate system
- No explanation to Facilities...







TASK 2

Blimp Aerial Photo USU Quad

Questions:

- Is this done correctly?
- Why is background black?
- Does it need a grid to be correct?



12TVM320200

(NAD 83)

Logan Riv

Road



28 Sep 2009 GIS 4930 Lab 3 Task 2 TASK 2





TASK 3 – SOME COMMON PROBLEMS

Georeference 2 to 6 higher resolution blimp images using total station control, which collectively cover quad

- Finding the 'right' images
- 'I georeferenced each image correctly but they don't line up' – GEOMETRY!!!!
 - What could I do to fix that?
- Confusion over mosaicing...







TASK 3

• How could error be estimated and reported?

Garbage Bag Targets Blimp Photos Overlay 2009



Resolution: Low Resolution Camera

Estimated Errors: There may have been some operator error when placing the prism to take the measurement.



LAB 3 TSK 2 Data Source: 10-1-09

2009 Blimp Georeferenced image 2009 Total Station Data

TASK 3 – PART II



Task 3 Image

Georeferenced 2 photos using the control points found using total station and control points marked on the ground by garbage bags with numbers on them. Resolution of 2 photos 8 cm

Task 2 Image

Georeferenced using 12 total stations for control on points marked on the ground by garbage bags with numbers on them. Applied a 2nd order transformation which gave a total RMS error of 0.26277. Resolution 8.2 cm

Projections are UTM Zone 12N, Datum is NAD 1983 (meters)

Blimp photos taken on 9/15/2009 using a blimp flown over the quad for class WATS 4930. Tues group 7-8 Camera used was RICOH model CX1, took a picture every 3 seconds.

Inset: HRO Image 2006 NAD 1983 UTM, Zone 12 N (meters) Transverse Mercator Resolution 25 cm Utah GIS Portal (http://gis.utah.gov/sgrid)

Legend

quad
usucampus



0 500 1,000

9/24/2009 Lab 3-Task2

RICH CONTEXT

 This student chose to show the steps leading up to construction of mosaic

Using Georeferenced Images to Create a Mosaic Image



Compositing the images above, I created this mossic. Because it is a composite of the images above, I will take the error and resolution measurements from the least accurate of those images above. This yelds a 4-inch resolution and a root mean square error of 8 continenters for the mosaic image when using second order transformations. The gridlines on this map reference the starting point we chose in the field (easting: 10,000m, northing: 20,000m) and are accurate for measuring distances on this map, but are not referenced to any larger coordinate system.

10050

10100

10150

1020

10000

9850

9900

9950



MOSAIC (BY OVERLAY OR COMMAND)

 Yours' isn't as easy as the textbook help example



ArcToolbox		
🗄 🚳 3D Analyst Tools	A Mosaic	
🛨 🚳 Analysis Tools	Mosaic □ □ □	
🛨 🚳 Cartography Tools	nput Rasters Mosaic	
🛨 🚳 Conversion Tools	Input Rasters INIOSAIC	
🛨 🚳 Coverage Tools		
🛨 🚳 Data Interoperability Tools	Mosaics multiple input	
🖃 🚳 Data Management Tools	rasters into an existing	
🗄 💩 Data Comparison	raster dataset.	
🛨 🔕 Database		
🛨 🚳 Disconnected Editing		
🛨 🚳 Distributed Geodatabase	1	
🗉 💩 Domains		
🗄 💩 Feature Class	+	
🕀 🔕 Features		
🗉 💩 Fields		
🖅 🔕 File Geodatabase		
🛨 🔕 General	Target Raster	
🗄 🚳 Generalization		
🛨 🄕 Indexes	Mosaic Method (optional)	
🕑 💩 Joins	LAST	
🕑 🍝 Layers and Table Views	Mosaic Colormap Mode (optional)	
🕑 🍝 Projections and Transformations	FIRST	
🖃 🚳 Raster	Ignore Background Value (optional)	
🕀 🥸 Raster Catalog		
🖃 🚳 Raster Dataset	NoData Value (optional)	
Copy Raster		
🚽 🦳 Create Random Raster		
- A Create Raster Dataset	Convert 1 bit data to 8 bit (optional)	
- Mosaic	Mosaicking Tolerance (optional)	
🖉 🖉 Raster Catalog To Raste	Color Matching Method (optional)	
	NONE	
🗈 🥸 Raster Processing	TWO	
🕀 🥸 Raster Properties		
🕢 🥸 Relationship Classes		
🖅 🚳 Subtypes		
🗉 🚳 Table	OK Cancel Environments << Hide Help Tool Help	
主 🔕 Topology		



