Airphoto mosaics and compression

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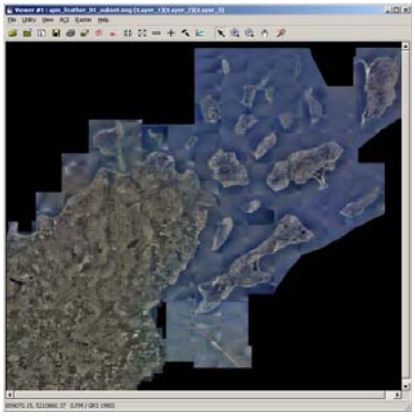
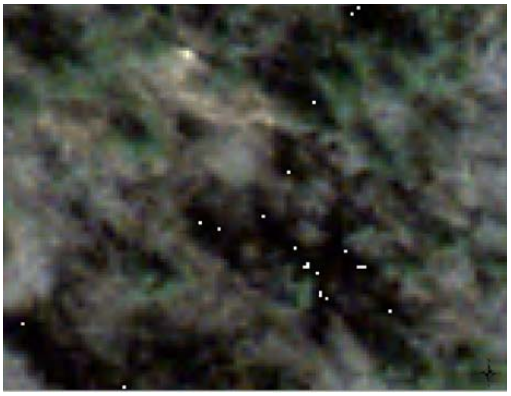
Steps of the process
1) Mosaicking

- Input: 8bit unsigned tiff
  - Software used: ERMapper 7.2
    - Settings: feather seams, cubic convolution resampling
    - Convert the resulting ers file to img file
  - The result of this is a large (90G) image with values ranging from 0-255, background values are 0s
  - I want to separate the background from the real image (foreground), so I ran it through Imagine and changed 0s in the foreground to 1s, keeping the background values as 0s
    - The resulting image has values from 0-255, with 0s as the background and foreground values ranging from 1-255



Steps of the process
2) Compression

- Input this large mosaic (img, with associated ige file) into GeoExpress 7.0 for compression
  - Also bring in area of interest (AOI) shapefile which defines the boundary between background and foreground
    - Chose background mask as 0s
  - Lossless compression (~2:1 compression)
    - Used lossless compression first because of GeoExpress cartridge usage
    - Output file: Generation 3 MrSid
    - Result: the image is fine since it preserves all original pixel values (lossless)
  - Lossy compression (20:1 compression)
    - Input: lossless sid from above
    - Again, bring in AOI and choose background mask as 0s
    - Output file: Generation 3 MrSid
    - Result: the compression has turned the 1s in the foreground to 0s, thus negating my efforts to separate the background from the foreground.
      - When viewed in ArcMap, turning 0,0,0 to transparent, foreground pixels in the image are now transparent



What else have I tried?

- GeoExpress 7.0
  - Load raw tiffs, mosaic, and compress to sid (Generation 3)
    - Transparency > 0,0,0
    - Background > 255, 255, 255
  - Results: image (sid), where it took low values (blacks) and changed them to high values (whites, >253)
- Compression to jpeg2000 (.jp2)
  - Available in ERMapper 7.2 and GeoExpress 7
  - Experience same problems as 20:1 compression ratio in MrSid
- Turning all pixels less than 20, to 20
  - At 20:1 compression, same results
- Lower compression ratios
  - Experimented with lower compression ratios such as:
    - 15:1
    - 10:1
    - 5:1
  - For me, lower compression ratios have been the answer so far. The 10:1 compression has worked on the mosaics I have. It preserves the separation between my low end values in the foreground and the background 0s
- Compressing the 10:1 compressed image again at 10:1
  - This does not accomplish anything, the file size stays the same.

What have other people suggested?

- ERDAS
  - They say that 20:1 compression with preservation of a separation between background and foreground is not possible.
- Lizartech
  - Their reply was that if a person wanted to preserve background from foreground you need to do lossless compression.
- Aerial Photography Field Office (APFO)
  - Have contacted, they're currently working on the problem at their shop.
- UMESC (Upper Midwest Environmental Sciences Center)
  - John C. Nelson suggested using GeoExpress to mosaic and compress
  - This has been tried and didn't work. (see previous slide, 1st bullet)

What else can I try?

- Compress the individual tiff files to jp2 (jpeg2000), then mosaic
  - Currently working this