

Thinning Resolution of Large Raster Images with Descartes

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What is the problem with Large Raster ?

Plotting

What is Plotting Background Imagery ?

- Plot Dialog and many other tools....
- All about image SIZE.
 - Plots to the "Ether"
 - Self Destructing Plot Time
 - Thanks for playing !



Possible Scenario

- You can smile, you all have been there....
- 10X150MB Images, TIFF, no GEO
 - Workflow
 - Try TIFF, too slow, 1.5 hours
 - Convert to iTIFF 2 hours processing, but have to do it again, ran out of room across the network or IT decides to XXX the server.
 - Register, now 10 200MB iTiff 4 hours
 - With other work Day One has Ended
 - Merge (geometry) and Mosaic 4 600MB images most of the morning
 - **Now it takes so long to open, that it's a built in Coffee Break and you begin to wonder about all this enhanced "Productivity" you have.**
 - Plot Time, No corridor, use fence to plot rotated Plan Sheet
 - Odds of getting a plot ?
 - » SLIM TO NONE and its taken 2 Man Days to accomplish this great feat of productivity.



Its all about Image Size....

- The smaller the image the faster it processes and the faster it plots.
- Balance of Type/Size/Quality



How do you control the Image Size?

- Merge/Crop/Corridor images reducing the pixel dimension
- Reduce Colors-1 bit, 8 bit, 24 bit
 - Selecting the right color format
- Image Compression, lossy vs. lossless
 - Best Algorithm: ECW, JPEG2000
- Mosaic Tools
- Vectorize
- Printing Optimization



How do you control the Image Size?

- Merge/Crop/Corridor images reducing the pixel dimension
- Manipulate Tools
- Reduce Colors-1 bit, 8 bit, 24 bit
 - Selecting the right color format
- Image Compression, lossy vs. lossless
 - Best Algorithm: ECW, JPEG2000
- Mosaic Tools, remove duplicate overlapping data
- Paint Tools, why have data 3miles north offset from the alignment?
- Printing Optimization
 - Would you pay \$600 for something worth \$225 ?



Quality vs File Size

- File size is a poor gauge of image quality
- The factors that affect the file size of an image at a specific resolution are:
 - File Format (TIFF, RAW, JPEG...)
 - Compression (JPEG, RAW, various compression modes available w/TIFF...)
 - Bit Depth (8 bit vs. 16 bit channels / 24 bit RGB)
 - Color Mode



Color Depth

- 24 bit
 - Do you need it ?
- 8 bit
 - Was this higher than 8 bit to start ?
- 1 bit or Monochrome
 - Are they really 1 bit ?



24 bit or not...

24 Bit RGB is photo standard, and sufficient to render continuity of tone and color.

- Greater editing power and possibilities. Color Masks
- Larger "palette" (more distinct colors) dictated by wider color choices.

File sizes twice as large as other files of the same pixel dimensions, which means:

- Impeded workflow, sslooww.....
- Not real portable, can't just email or FTP easily.



Compression

- Lossy meaning "with losses to quality"
- Lossless means "fully recoverable".
- Images appear "bad" and very "unclear", when excessive compression is used, too much, or saved too many times in other formats, or both.
- For example TIF LZW is lossless compression, no loss of quality due to compression (zero loss).
- Lossless file compression is less effective, meaning that it can not produce files so drastically small as JPG. The lossless file size is closer to the actual size of the color data, perhaps 70% or 80% instead of 20% to 40%.



Image Types

- **HMR** great for gray tones and >256 colors.
- **ITIFF** optimized for speed and efficiency with Descartes and Raster Manager.
- **Mr. Sid**, read ,no write.
- **COT** and all the other **INGR** formats
- **TIFF**, just too large but convertible.
- **JPEG**, depends on compression
- **JPEG2000**, promising
- **BMP, PCX, RLC, TGA** etc.
- **BIL, ECW** more GIS formats



Image Sizes vs. Quality



Image Sizes vs. Quality

HM1999-USA-0000-15.ecw	70,897 KB	ECW File
HM1999-USA-0000-15.itiff	150,448 KB	ITIFF File
HM1999-USA-0000-15.jp2	99,159 KB	JP2 File
HM1999-USA-0000-15.tif	836,387 KB	TIF File

ECW uses Wavelet Compression, the same basic compression used in Mr. Sid

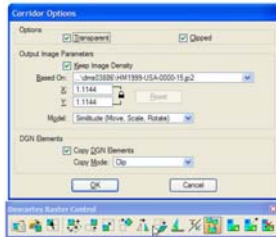


Scaling vs. Resampling

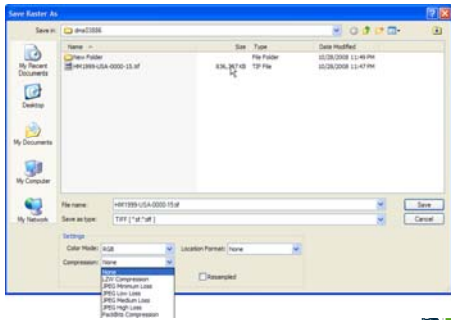
- There are two different ways to make the same digital image print at different sizes:
- **Scaling** - changes the print resolution (the output dpi/ppi) to yield the desired physical dimensions with the pixel dimensions present in the image file.
- **Resampling** - changes the pixel dimensions of the image to yield the desired physical dimensions at a given output resolution.

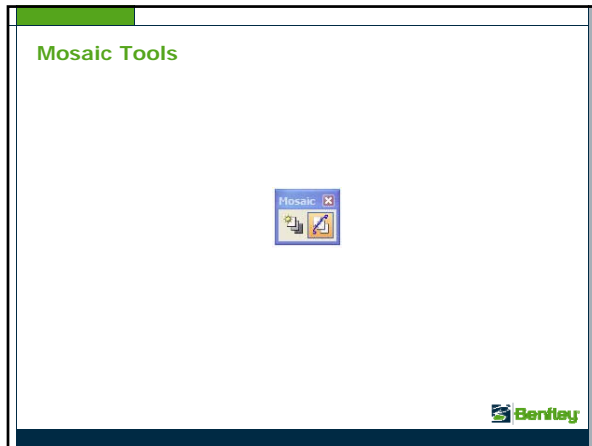


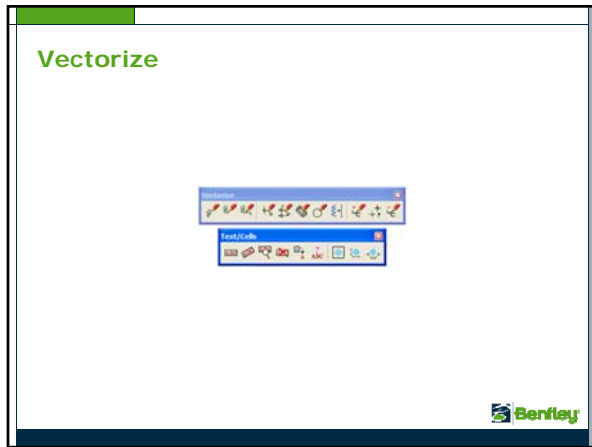
Merge/Crop/Corridor Tool

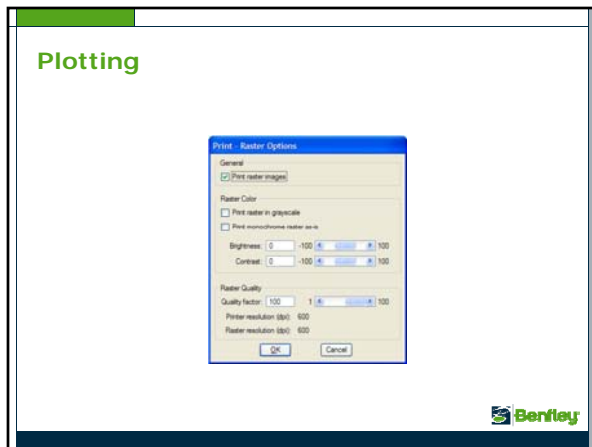


Data and Color Compression









Thank You !

Questions ?

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