Image Processing in ArcGIS

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What is image processing?

• Basic/advanced
• Pre-processing
  - radiometric / geometric corrections
• Post-processing
  - Display and enhancement
  - Analysis (e.g. information extraction)
Preprocessing

- Making imagery useful
  - Radiometric
    - Correcting sensor distortions
    - Atmospheric corrections
    - Illumination corrections
  - Geometric
    - Georeferencing
    - Orthorectification
Post-Processing

• Designing for a specific use
  - Merge bands or create specific band combination
  - Format conversion
  - Improve visual quality (enhance)
  - Pan-sharpen
  - Mosaic
  - Color correction
Processing on the fly

- Define properties on layers
- Use functions
Processing permanently

- Use geoprocessing tools
- Export from display
Image enhancement

- Imagery may be enhanced by default
- Enhancements require statistics

None

Histogram equalize

Std dev – 2

Percent clip – 2

Percent clip – 0.25
Effects on the histogram

None

Histogram equalize

Percent clip – 2
Combining bands

- Change bands to present different information

RGB – 321: Natural Color
RGB – 432: Color Infrared
RGB – 453: Delineate Water
RGB – 742: Vegetation and soil
Panchromatic sharpening

• Fusing a lower-resolution with a higher-resolution
Mosaicking

- Using a mosaic dataset
  - Can be color corrected
- Creating a mosaic layer
  - Uses the Mosaic function
- Creating a new output
  - Exporting to a new output
  - Creating with geoprocessing tools
Image processing—analysis

- Image classification
- Filtering (e.g. edge enhancements)
- Image or band algebra (e.g. indices, difference)
- Principal components analysis

* May require Spatial Analyst extension
Questions?

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