Esri International User Conference | San Diego, CA

Technical Workshops | July 13, 2011

Image Processing in ArcGIS

Melanie Harlow

What is image processing?

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

Preprocessing

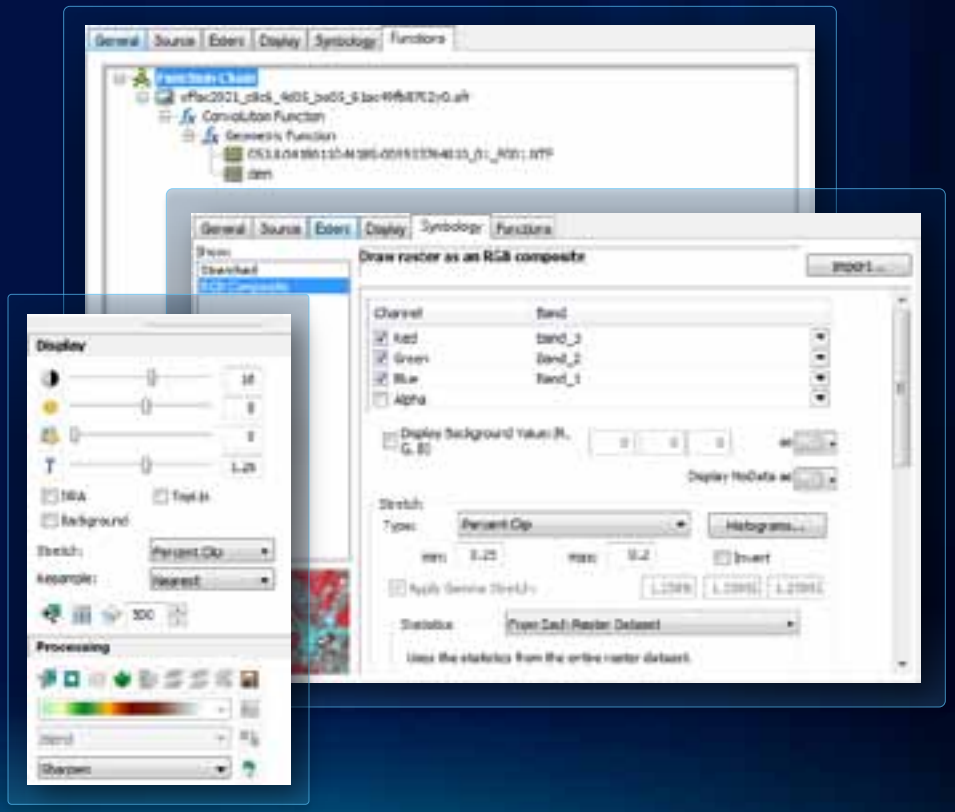
- Making imagery useful
  - Radiometric
    - Correcting sensor distortions
    - Atmospheric corrections
    - Illumination corrections
  - Geometric
    - Georeferencing
    - Orthorectification

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

Std dev – 2

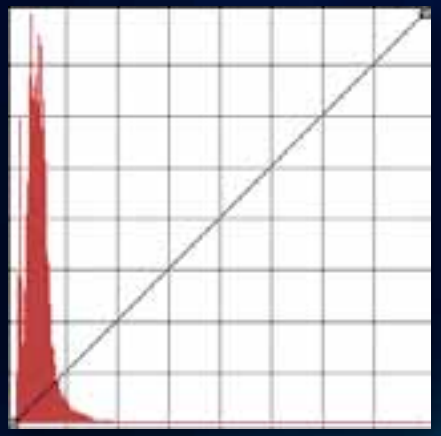
Percent clip – 2

Histogram equalize

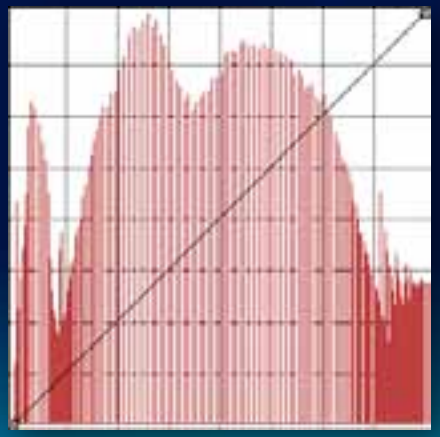
Percent clip – 0.25

Effects on the histogram

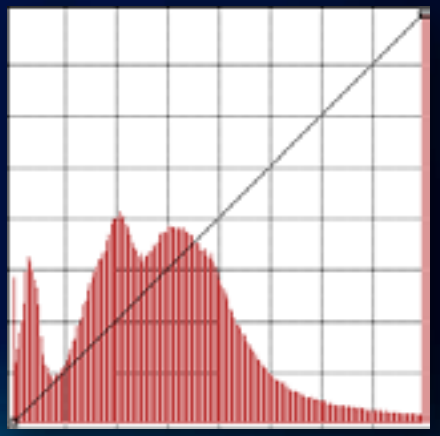
None



Histogram equalize



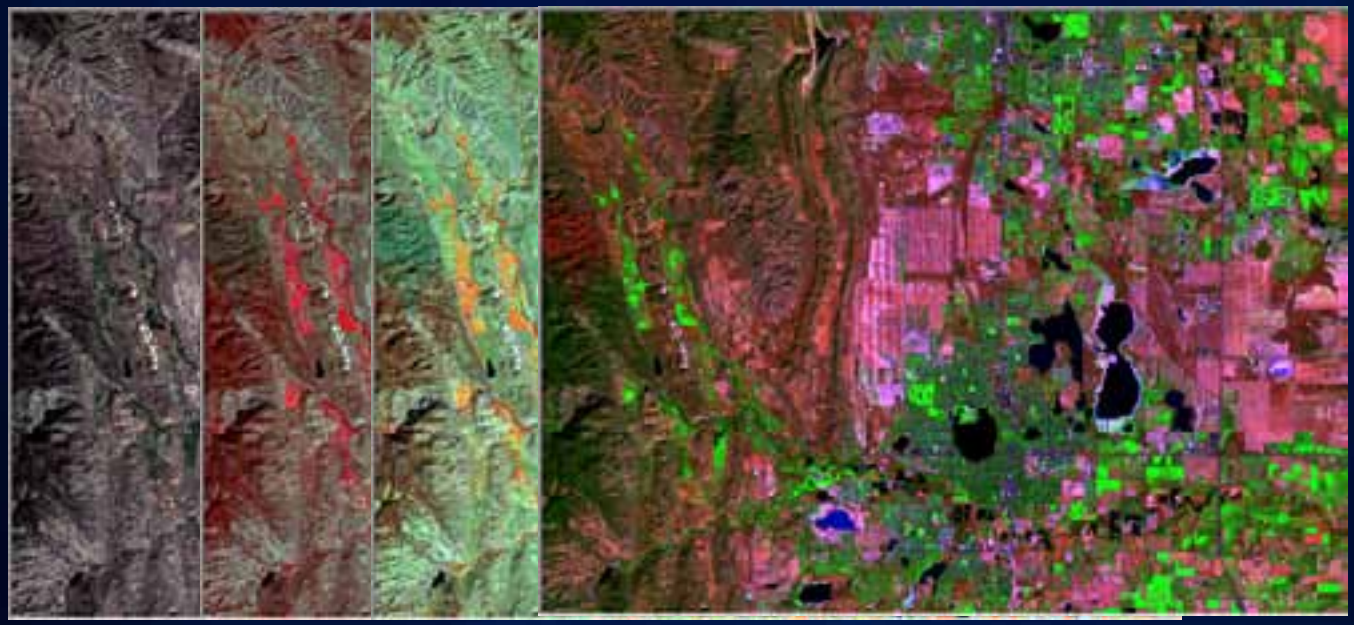
Percent clip – 2



Combining bands

- Change bands to present different information

RGB – 321: Natural Color RGB – 432: Color Infrared RGB – 453: Shortwave Infrared RGB – 743: 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

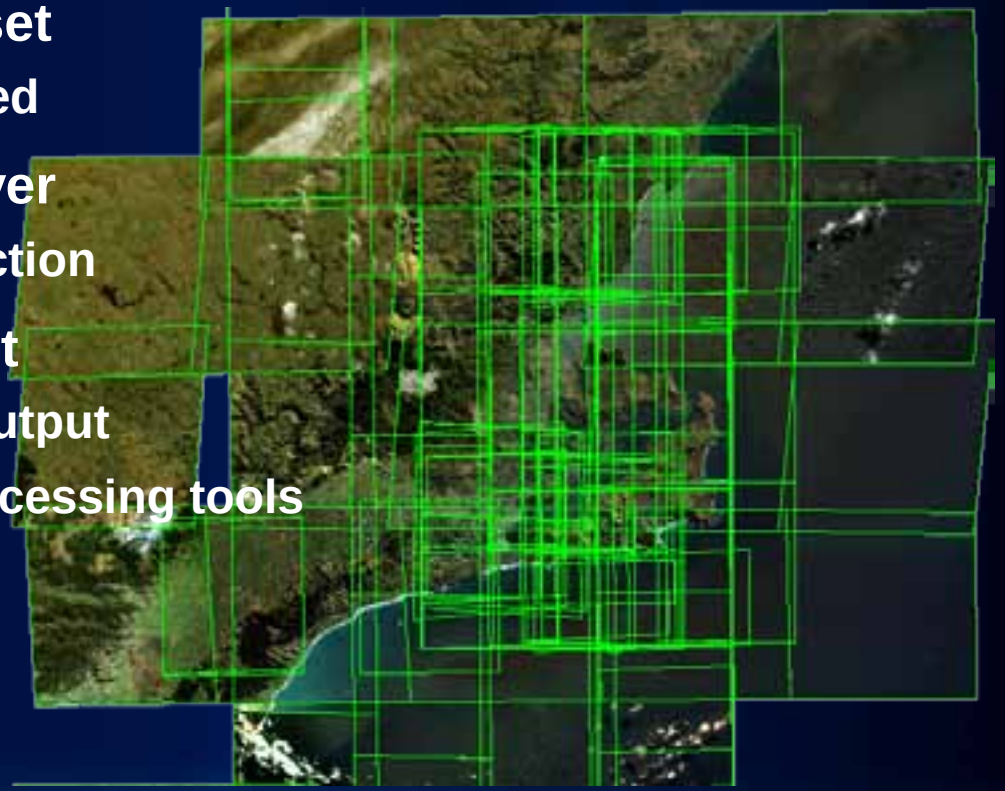


Image processing—analysis

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

- * May require Spatial Analyst extension

Demo

Questions?

www.esri.com/sessionevals

esri