Validation

Burn Severity was correctly predicted between 54% and 79% by satellites.

Satellites correctly predicted unburned/burned acreage 94% of the time.

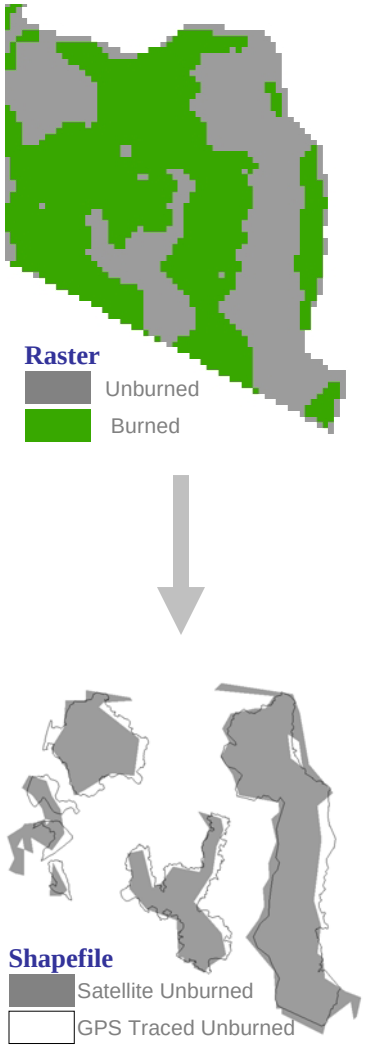
Applications

Burned/unburned areas can be quickly determined and mapped.

Short/Long-term fire effects on vegetation and soils can be estimated for prescribed burns and wildfires.

Guides mitigation response.

Monitoring: Evaluate Rx fire goals.



Conversion of Raster dNBR unburned/burned image to unburned shapefile. The actual traced unburned shapefile is included for perspective of satellite accuracy.

Contact Information
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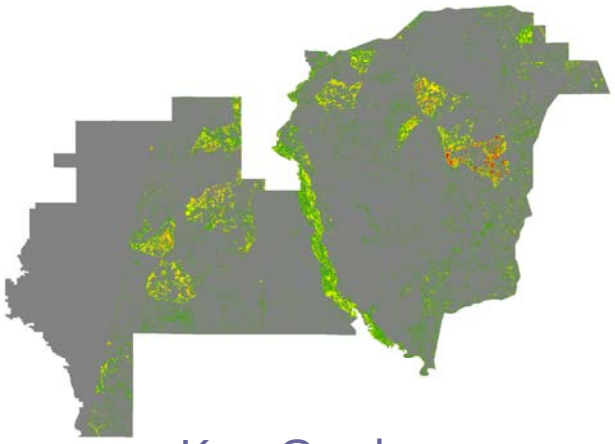
Satellite Mapping of Fire Perimeters and Severity Within the Apalachicola National Forest:

Methods and Applications



Ken Gordon

Josh Picotte

Apalachicola National Forest

Location: Northern Florida

Area: 564,961 Acres

Main Habitats:

Sandhill Pineland

Flatwood Pineland

Depression Swamp

Fire

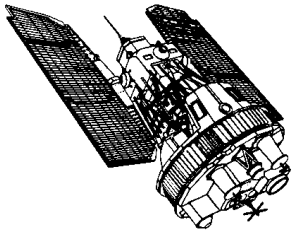
Prescribed: 90-100,000 acres burned each year.

Wildfire: 7,765-acres burned each year.

Problem: Fires often burn in mosaic patterns with variable severity (ecological change). It is therefore difficult and expensive to estimate the actual acreage and severity of the burn.

Remote Sensing

Satellites measure the reflectance of light.

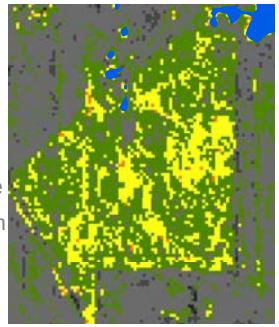

Landsat

NBR (Normalized Burn Ratio): Remote sensing of burn severity that takes into account the vegetation and soil changes due to fire.

dNBR (Differenced NBR): Change in reflectance pre- and post-fire.

dNBR = pre-fire NBR – post-fire NBR

dNBR Severity
- Unburned
- Low
- Low-Moderate
- Moderate-High
- High


Prescribed Burn Image

Ground Truthing

CBI (Composite Burn Index): Ground measure of burn severity.

Plots are 30 meters in diameter.

Measurements evaluate fire effects on soil and vegetative strata ranging from ground level to upper tree canopy.

CBI Plot