Remote Sensing of burn perimeters using Landsat TM Imagery within the southeastern United States

Josh Picotte
Kevin Robertson

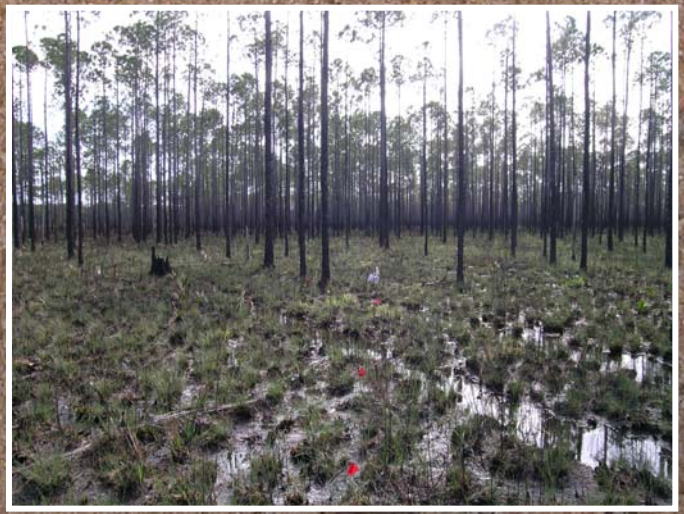
Objectives

- Determine accuracy of remotely monitoring areas affected by fire
- Objectively monitor ecological change over time
- Estimate the amount particulates emitted by prescribed burning and wildfires

Habitat Types

- Sandhill Pineland
  - Turkey Oak
  - Wiregrass
  - Bracken Fern
  - Longleaf Pine

- Flatwood Pineland
  - Palmetto
  - Longleaf/Slash Pine



Location-Apalachicola National Forest (ANF)

Burn Severity

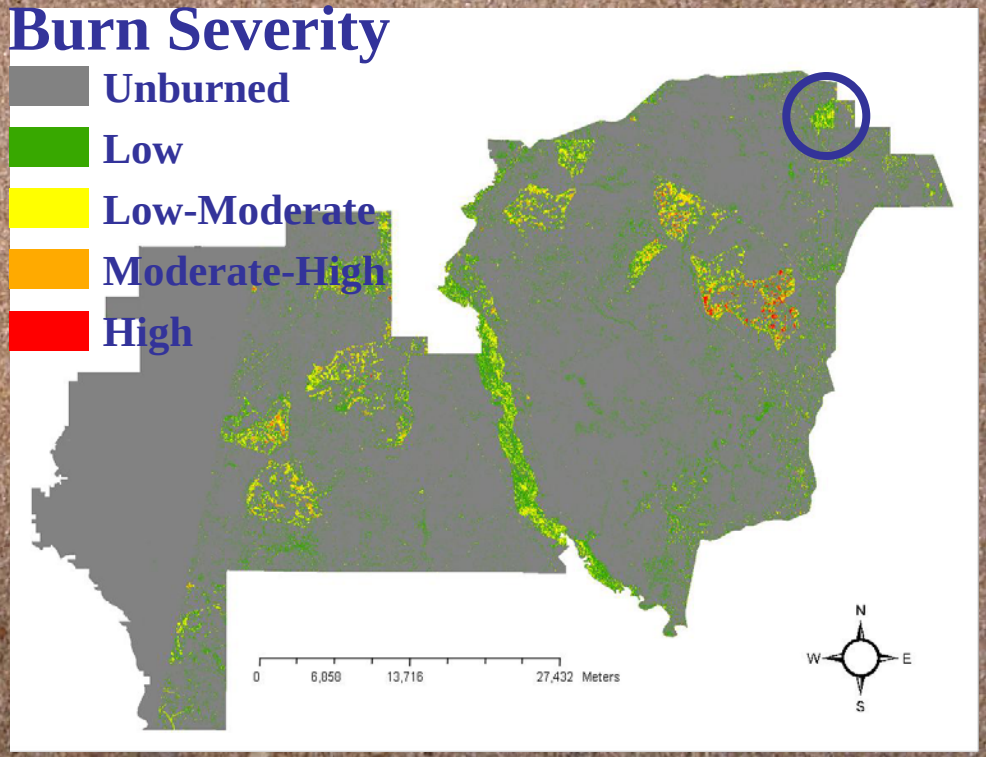
- Ecological Change
- Differs between vegetation types
- Seasonality

Unburned

High

Remote Sensing

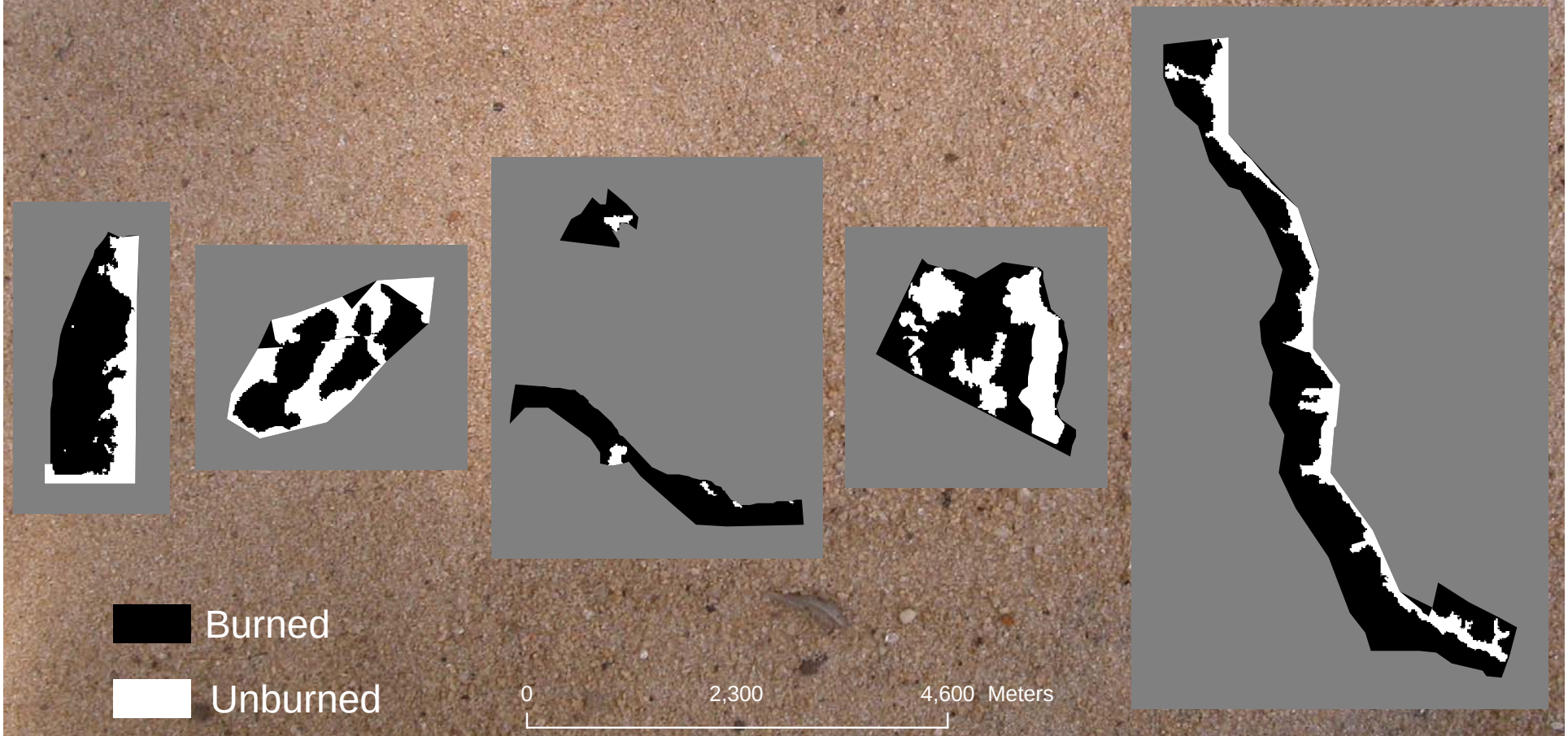
- Satellite Reflectance
- NBR: Normalized Burn Ratio
- dNBR=NBRprefire-NBRpostfire



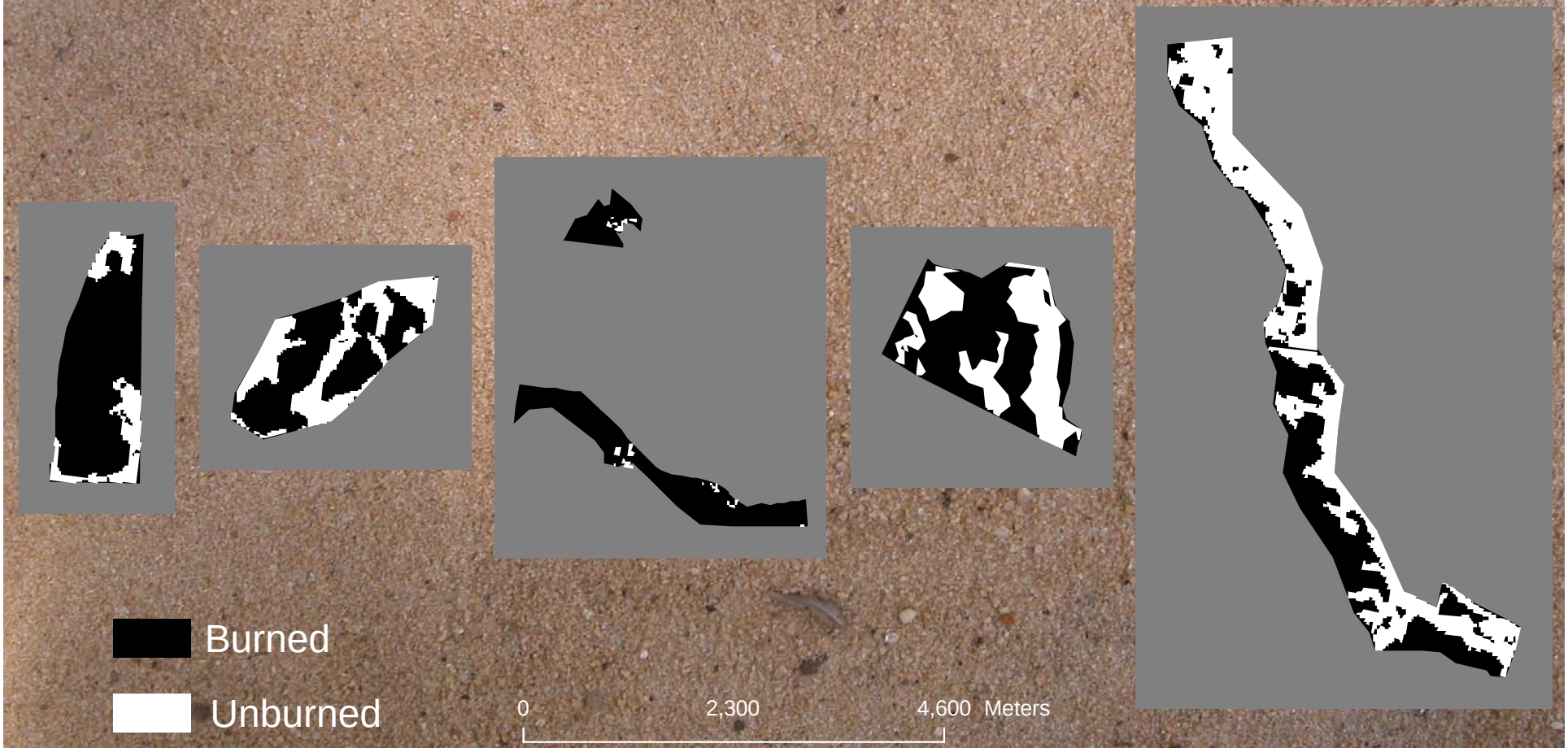
Ground Truthing

- 30 m Plots
- Composite Burn Index (CBI)
- Five Strata
- CBI Score
- 73-100% agreement with satellite data

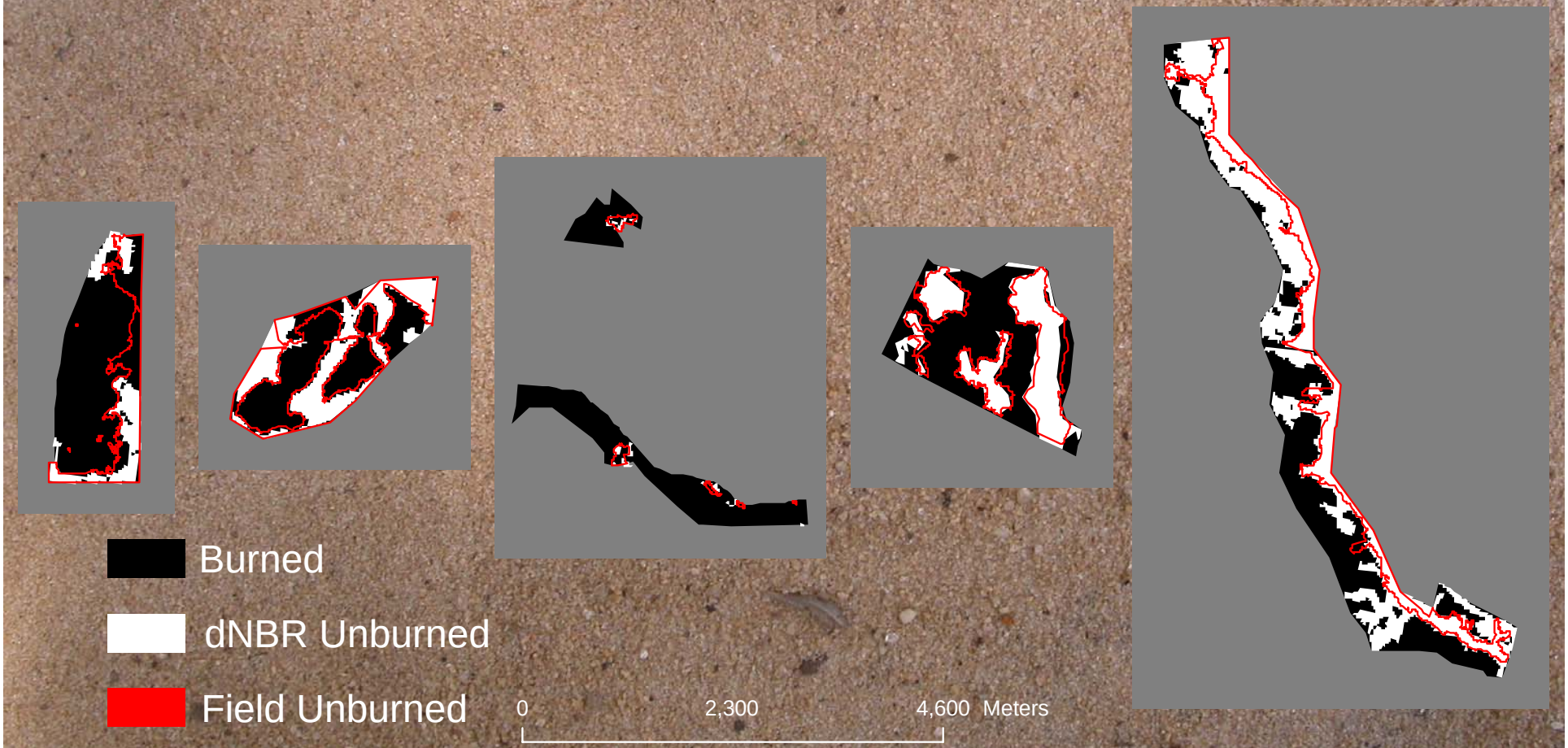
Field Unburned Area Tracing



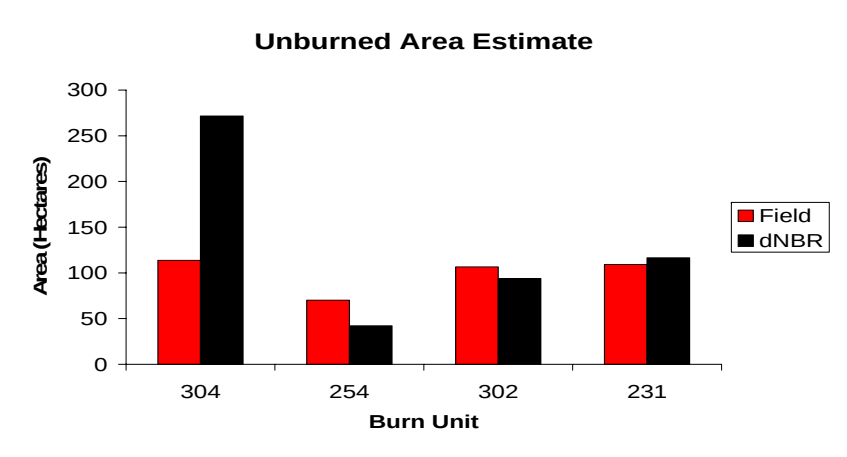
dNBR Unburned Area Estimation

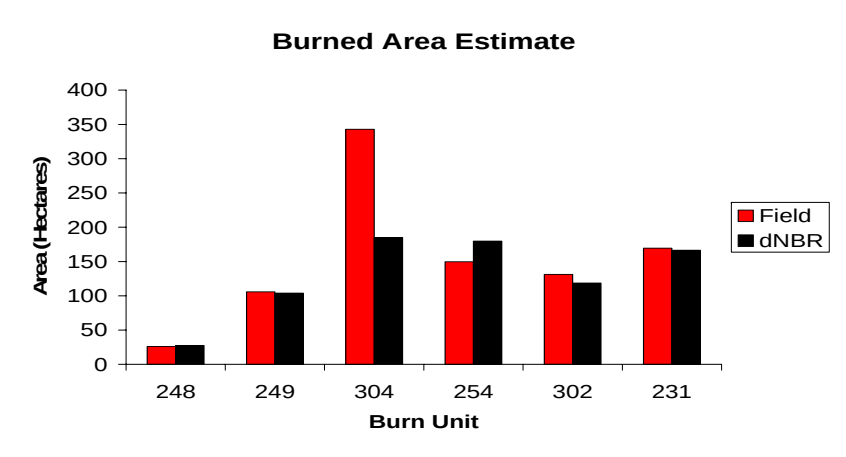


Field versus dNBR Unburned Area Estimation



Results





Unburned Percent Area Difference

- 18%

Burned Percent Area Difference

- -23%

Conclusions

- dNBR images usually provides an adequate estimation of on-the-ground burn severity
- dNBR imagery can help determine burned boundaries
- Problems
  - Date of satellite image acquisition
  - Seasonality
  - Time since burn
  - Other sources of land change
- Benefits
  - Cheap
  - Efficient use of time

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