Fire Classification using Remote Sensed Data in Greater Everglades

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EGSC
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Outline

Main Project Background

Work experience at USGS

- Study Area
- Burned Scars Classifications
- GEER 2010 Conference

Summer Activities
Main Project Background

- **Land Cover Dynamics and Environmental Processes**
  - Use of the science to support the restoration of the SFL Everglades.
  - Create well-calibrated multi-temporal and multi-resolution databases that demonstrate the utility of USGS remote sensed data for resource management, afford process and scaling studies.
The importance of fires…
Water Flow Dynamics...
Study Area

- **ENP**
  - Everglades National Park
- **BICY**
  - Big Cypress Forest
- **WCA’s**
  - Water Conservation Areas
Greater Everglades

- At original state has an extent of 4,000,000 acres.
- Actually comprises 1,500,000 acres of natural landscape.
- Ecosystem decline began with draining wetlands for irrigation channels.

http://www.sofia.usgs.gov/
Normalized Burned Ratio

\[ \text{NBRETM}^+ = 1000\left(\frac{R_4-R_7}{R_4-R_7}\right) \]

(J.W. van Wagendonk et al., 2004)

\[ \Delta \text{NBRETM}^+ = \text{NBR}_{P} - \text{NBR}_{P} \]

(J.W. van Wagendonk et al., 2004)
MODIS vs ETM+
Fire of March 23, 2001 (11760 acres, 13 days)

MOD11A1 Product (8-Day Temp. /Kelvin Composite)

Legend
- Non-fire

MOD14A1 Product (8-Day Fire Class. Composite)

Landsat ETM+
2001_11_06_TM7, (B5,B4,B3)
Burn Scars Classification

Overall Accuracy = \( \frac{1162}{1397} \) 83.2%
Kappa Coefficient = 0.7418
Burn Scars Classification

Overall Accuracy = \( \frac{1123}{1131} \) 99.2927%
Kappa Coefficient = 0.9881
GEER 2010 Conference

- “The Greater Everglades: A Living Laboratory of Change”
  - Planning, Policy and Science Meeting
- Provides a valuable forum for restoration practitioners.
  - Climate Change/Sea-Level Models
  - Invasive Species
  - Restoration Approaches
Thanks!!!

Everyone!

“There are no other Everglades in the world.”
- Marjory Stoneman Douglas, The Everglades: River of grass, 1947