



# Fire Ecology Analyses for South Florida Everglades

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**2009 USGS Summer Internship**

# Outline

**Main Project**

**Study Area**

**Imagery Processing**

- SFL Everglades burn scar mapping
- Burn severity analyses

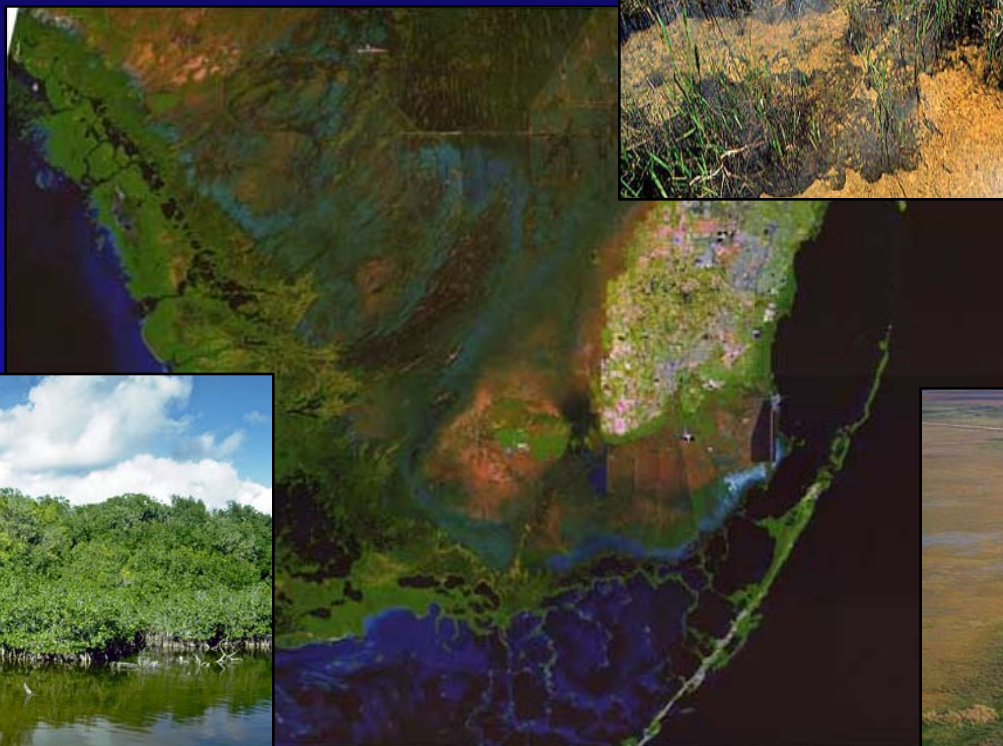


# Main Project Background

- **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 and afford process and scaling studies.



# Study Area



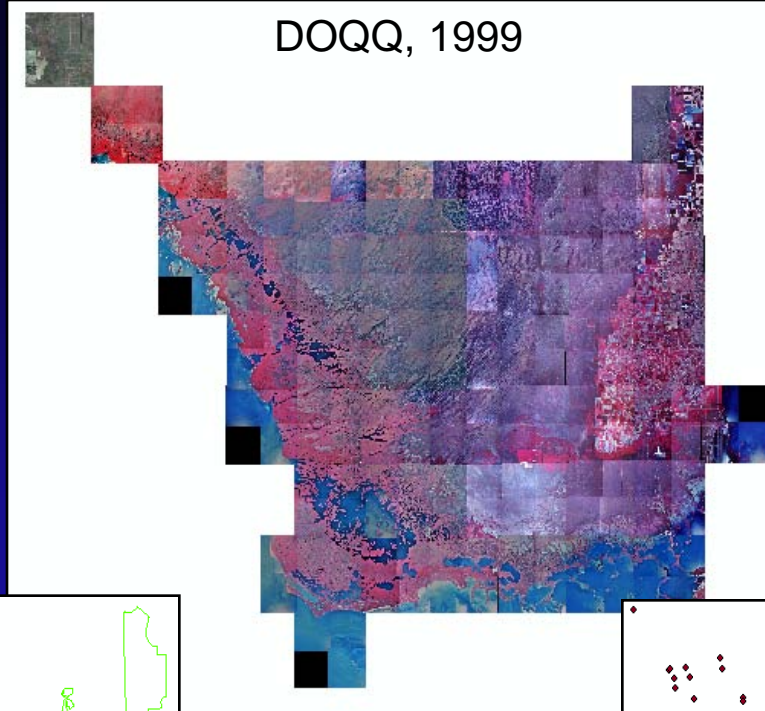


# Burn Scars

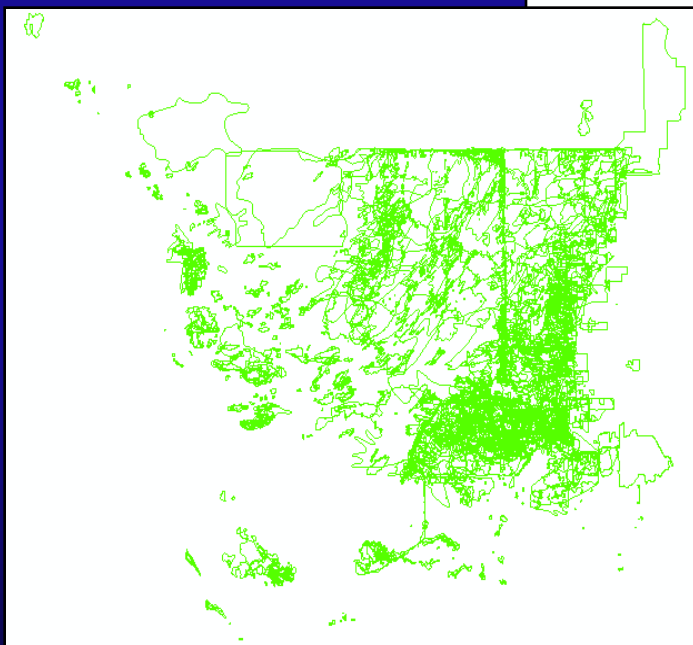
- Important to habitat and water flow studies.
  - Effects on vegetation/animal species.
  - Flow rate changes depending on the amount of vegetation.



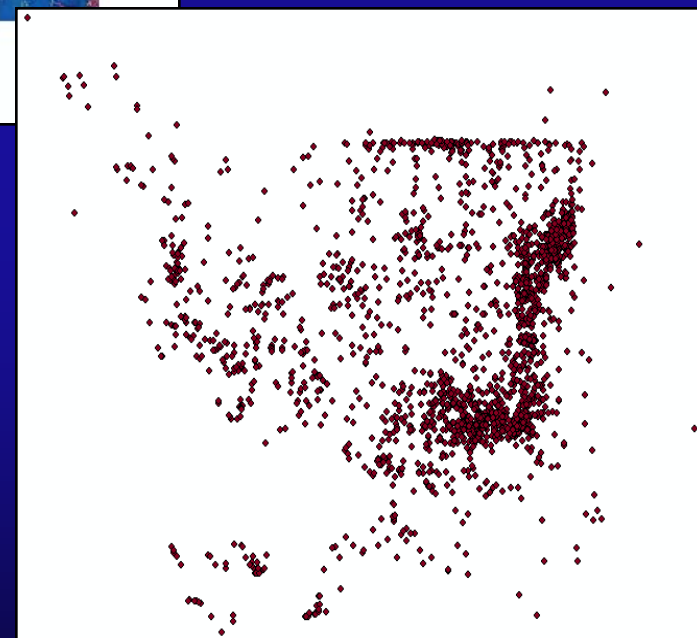
DOQQ, 1999



Burned Scars 1948-2004  
(A. Foster, 2004)



Fire ignitions 1948-2004  
(A. Foster, 2004)



- Calculation of the Normalized Vegetation Ratio,
  - $NBR_{ETM+} = 1000[(R_4 - R_7)/(R_4 + R_7)]$  (J.W. van Wagtendonk et al., 2004)
  - $\Delta NBR_{ETM+} = NBR_{PRE} - NBR_{POST}$  (J.W. van Wagtendonk et al., 2004)
- Supervised Classifications (Maximum likelihood) were made using ROI's of the burned scars to get a map of all the burned areas for SFL.





# Fire Ecology

- Useful to know the severity burned on the fire scars.
  - Rates of burning along different vegetation types.
  - Modeling water flow rates.



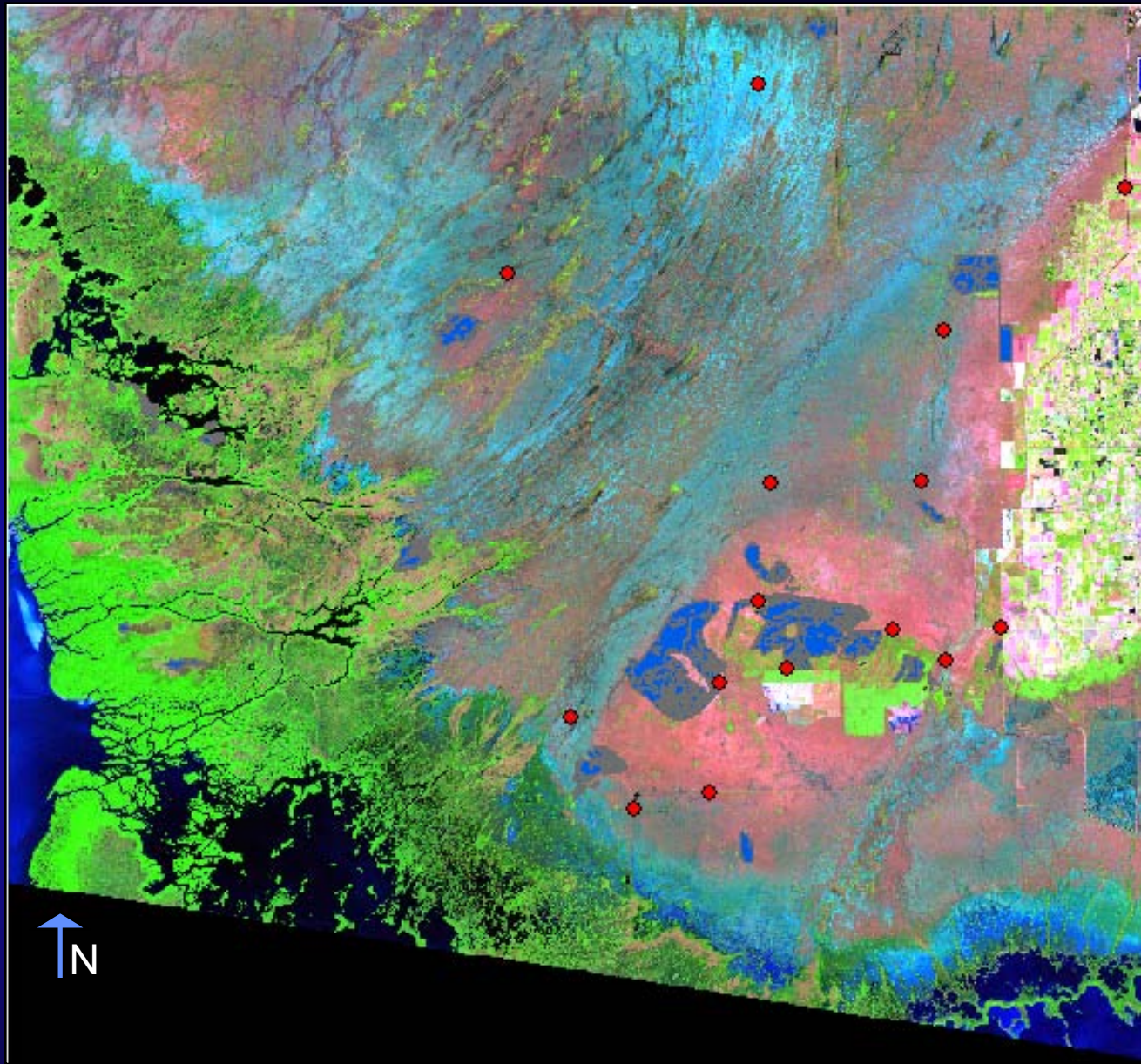
USFWS



USFWS

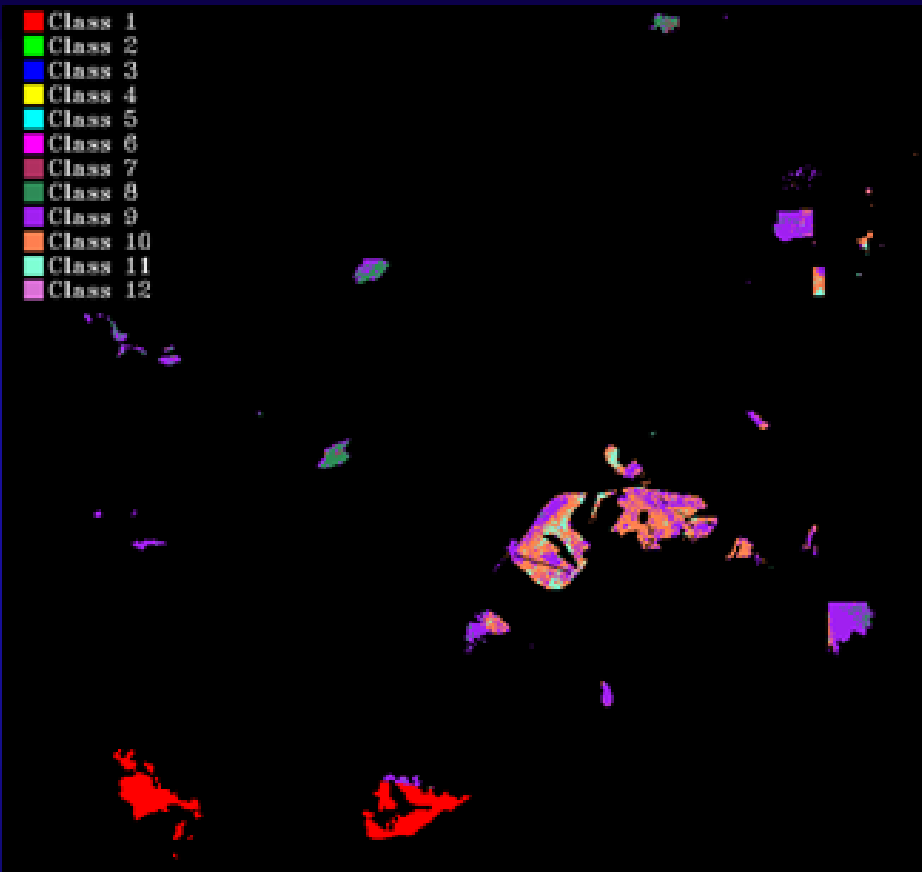




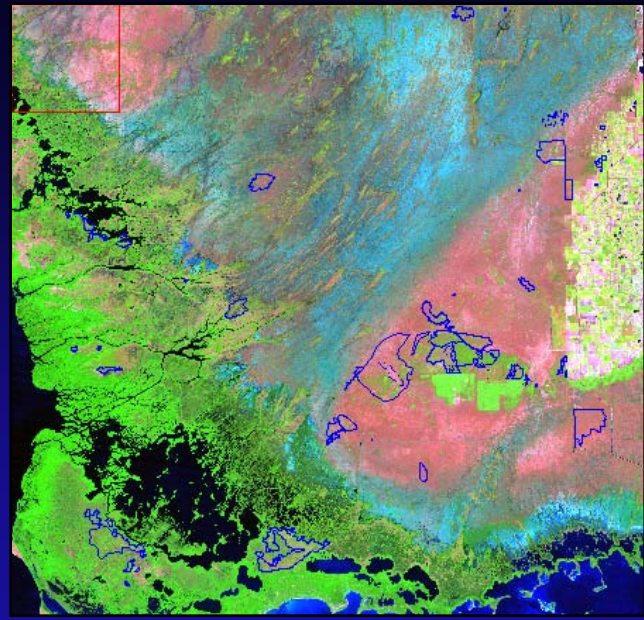




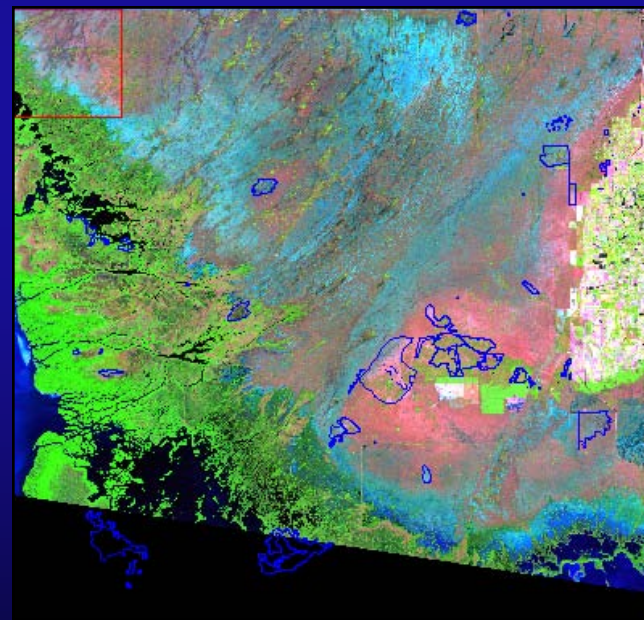
# Classes of Burn/Severity



Example of January 2003-2004

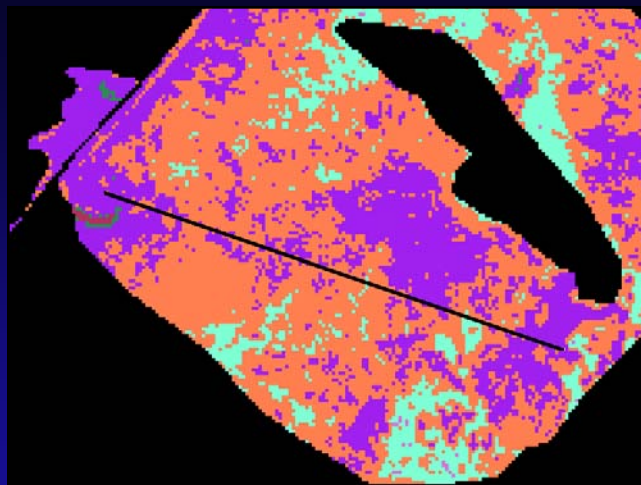


Before

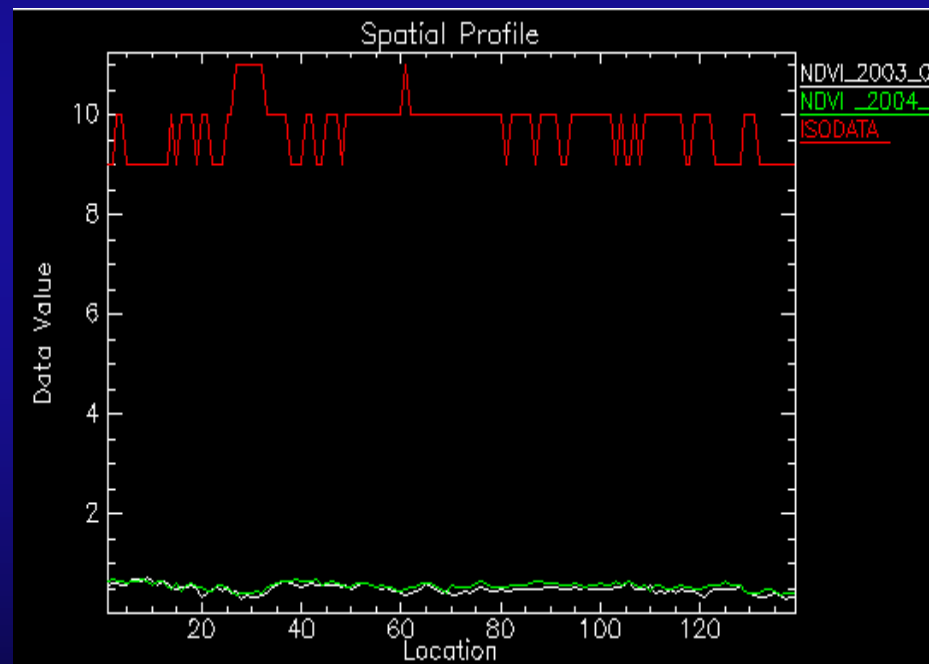
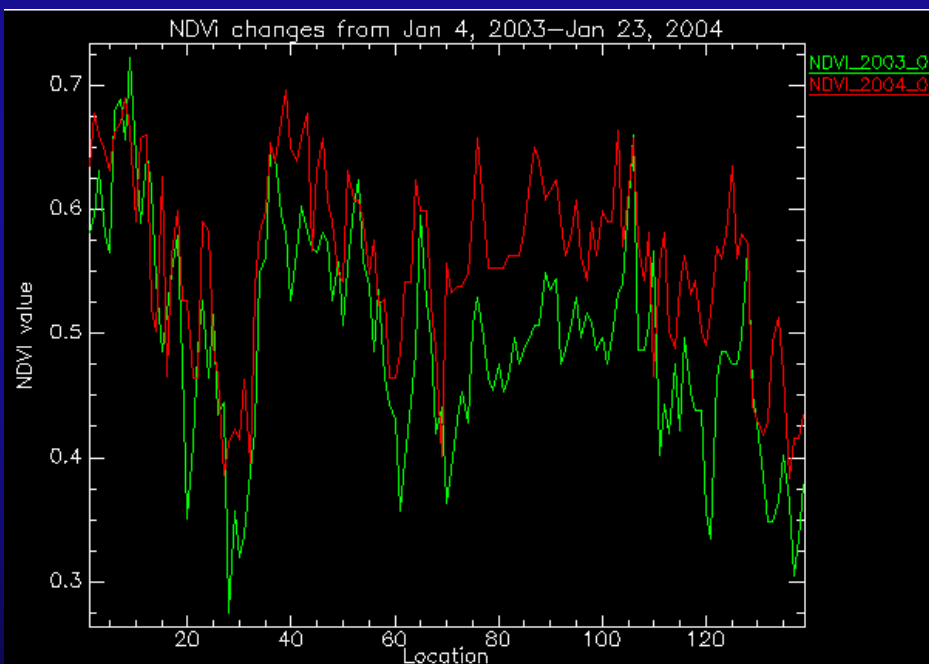


After





May 15, 2003



# Examples of fire ecology analyses

6/1/2002	mangrove	White mangrove, mixed graminoids	3.05 (Fire), 0.57 (Image)	+ $\Delta$ NDVI values
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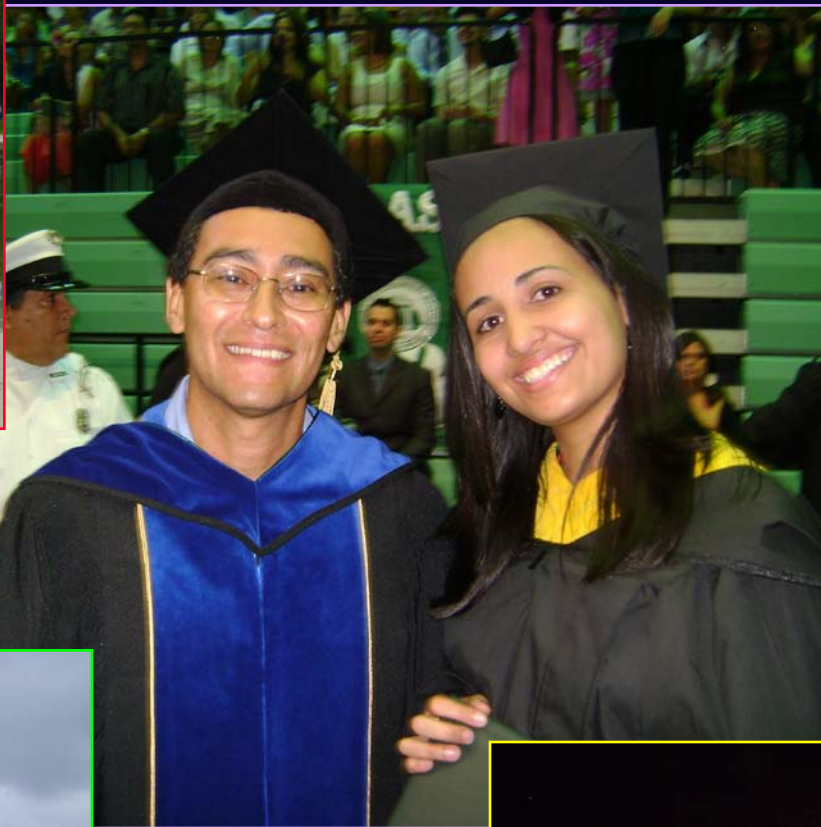
Imagery dates: 2-18-2002 / 2-13-2003

8/6/2003	slough	Saw grass, mixed graminoids	3.48 (Fire) 3.36 (Image)	- $\Delta$ NDVI values
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Imagery dates: 1-4-2003 / 1-23-2004







 USGS



# Thanks!!!

## Everyone!

