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Ecological Models for Pine Rocklands and Other South Florida Biophysical Settings Developed Through LANDFIRE

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The Nature Conservancy

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Objectives

- Provide an overview of LANDFIRE
- Discuss the purpose and use of the models, and the development process
- Present the models developed for south Florida with a focus on the pine rocklands model
- Encourage south Florida experts to participate in development of the next generation of models

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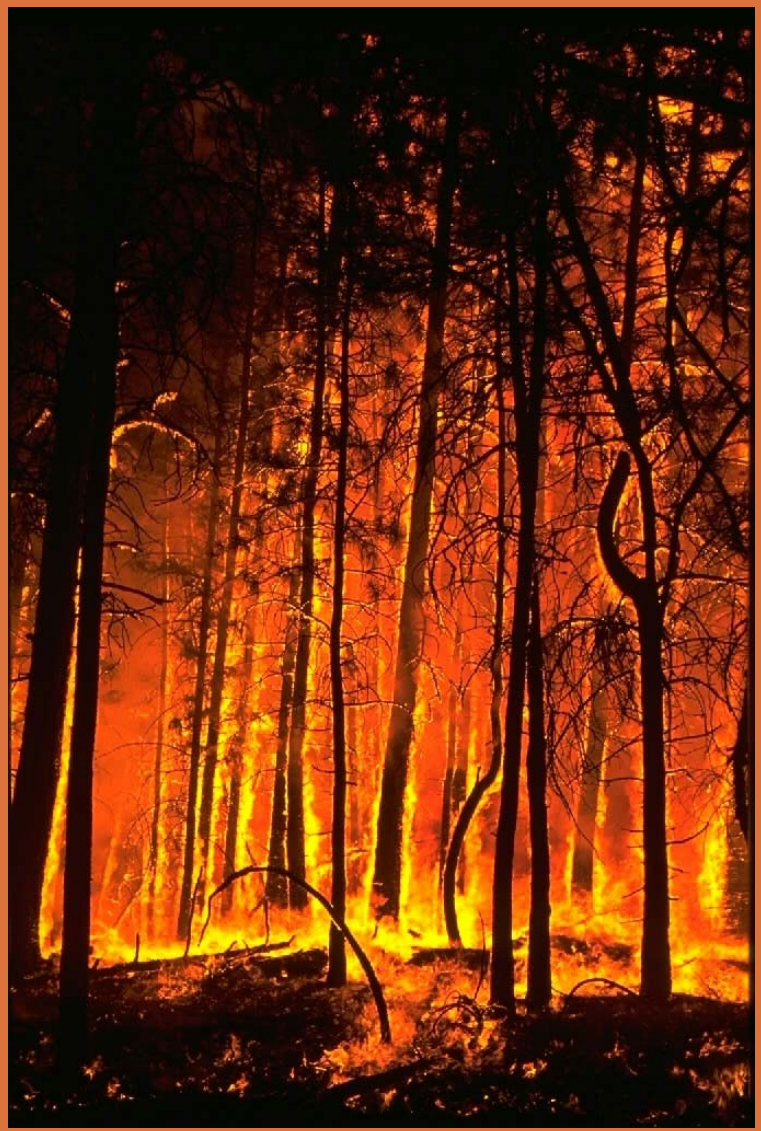
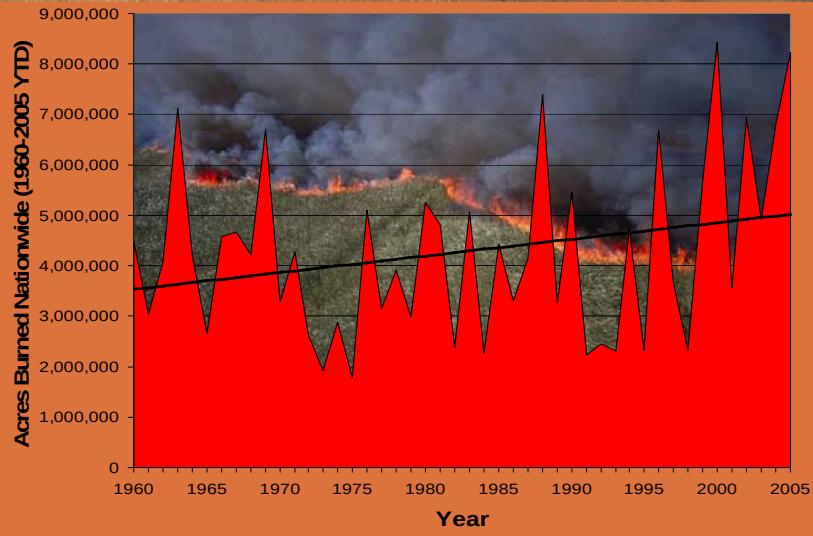
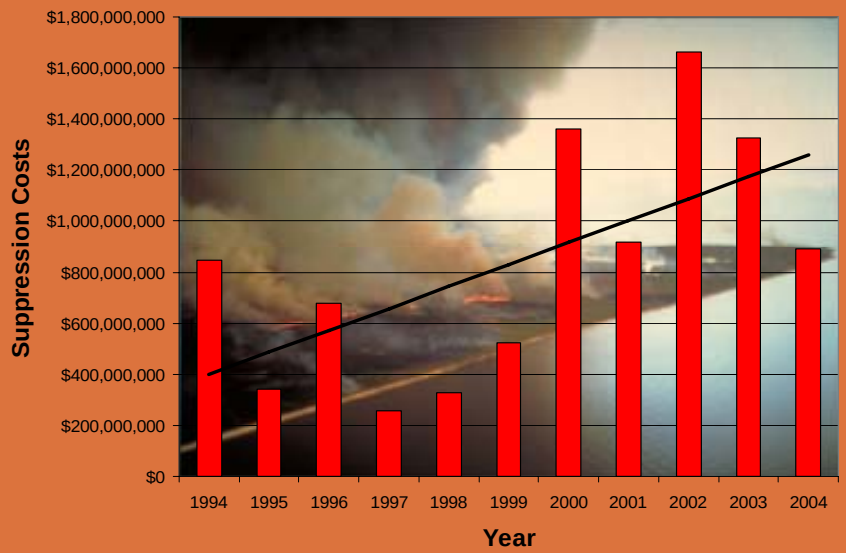
The Results of Fire Exclusion







Source: National Interagency Fire Center – www.nifc.gov

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NFP and the HFRA

The National Fire Plan was developed in August 2000, following a landmark wildland fire season, with the intent of actively responding to severe wildland fires and their impacts to communities while ensuring sufficient firefighting capacity for the future. The NFP addresses five key points: Firefighting, Rehabilitation, Hazardous Fuels Reduction, Community Assistance, and Accountability.

"...federal land management agencies do not have adequate data for making informed decisions and measuring the agencies' progress in reducing fuels." (GAO Report)

- We don't have the data needed to prioritize fuel treatment areas.
- We don't know the total number of acres that need treatment.
- We don't know where the areas are.

"...LANDFIRE is the only proposed research project so far that appears capable of producing consistent national inventory data for improving the prioritization of fuel projects and communities." (GAO Report)

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What is LANDFIRE?

LANDFIRE is a five year, multi partner wildland fire, ecosystem, and fuel assessment mapping project that will generate consistent, comprehensive, landscape-scale maps and data of vegetation, fire, and fuel characteristics in the United States. For more information see www.landfire.gov.

A Joint Effort for National Fire Management

Funding Agencies:

Project Leads

USDA Forest Service
Rocky Mountain
Research Station
Fire Science Lab
Missoula, M.T.

DOI USGS
Earth Resources
Observation Systems
(EROS) Data Center
Sioux Falls, S.D.

The Nature
Conservancy
Boulder, C.O.

FRCC Team
Fire & Aviation
Management
Washington D.C.

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TNC Primary Responsibilities

- Quantitative successional models
- Application tests of LANDFIRE – US data
- Accuracy assessments of data and models
- Dissemination of science and tools
- Ecological modeling training
- Expert fire science workshops

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LANDFIRE

Parts – Subprojects

- ✓ Rapid Assessment
- ✓ LANDFIRE National Implementation
- ✓ Fire Regime Condition Class
- ✓ Tech Transfer

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Rapid Assessment Products

- ✓Historical Fire Regimes
- ✓Fire Regime Condition Class
- ✓Potential Natural Vegetation Groups
- ✓Reference Condition Models

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Geospatial Products

- Historical Fire Regimes
- Fire regime condition class
- FARSITE Layers (Fire behavior)
- Fuel loading models (Fire effects)
- Vegetation classifications
- Approximately 100 geospatial data layers

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Additional LANDFIRE Products

- **Historical natural fire regimes**
- **Fire regime condition classes**
- **Fuels, FARSITE input data layers**
- Climate and weather (DAYMET)
- A suite of 100+ environmental gradient layers
- **Comprehensive field reference database**
- Potential vegetation types
- Actual vegetation types
- Actual vegetation canopy height
- Actual vegetation canopy density
- Vegetation and habitat conditions
- Biophysical settings
- Mapped soil attributes
- Succession pathways
- LF-BGC model
- LANDSUM model
- WXFIRE model
- **FIREHARM model**
- Potential fire behavior fuel models
- Fuels loading models
- Crown fuel models
- Repeatability, adaptability
- Peer-reviewed science
- WUI, topography, infrastructure, seamless distribution, and watershed analysis capabilities via USGS *the National Map* research

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FRCC Method

Biophysical Settings + **Fire Regime Group** = **Reference Vegetative and Fire Regime Conditions**

Current departures from reference conditions = **Fire Regime Condition Class**

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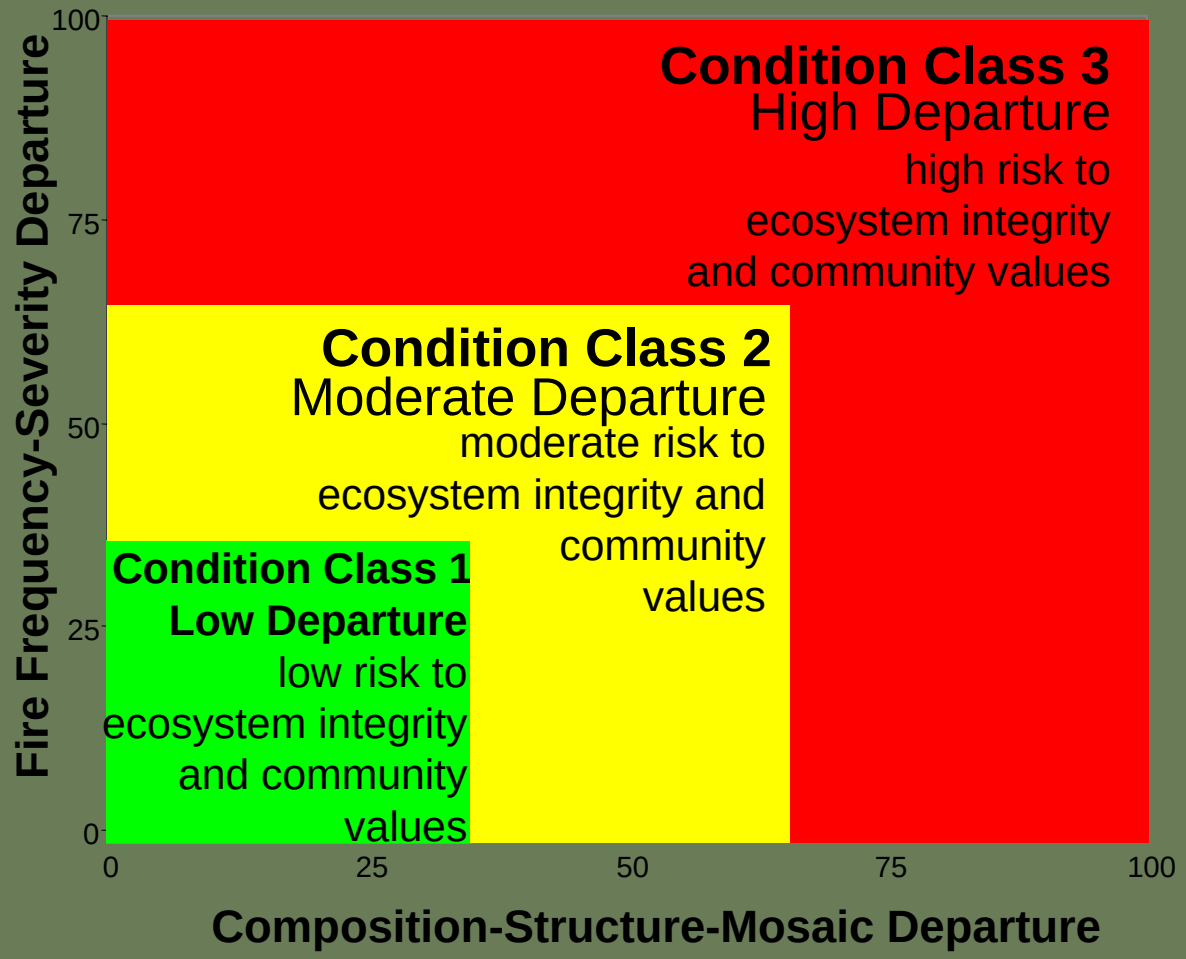
Fire Regime Condition Class

Group	Frequency	Severity
I	0-35 yrs	Low-mod (<75% top-kill)
II	0-35 yrs	High (>75% top-kill)
III	35-100+ yrs	Mixed (25-75% top-kill)
IV	35-100+ yrs	High (>75% top-kill)
V	200+ yrs	High (>75% top-kill)



www.frcc.gov

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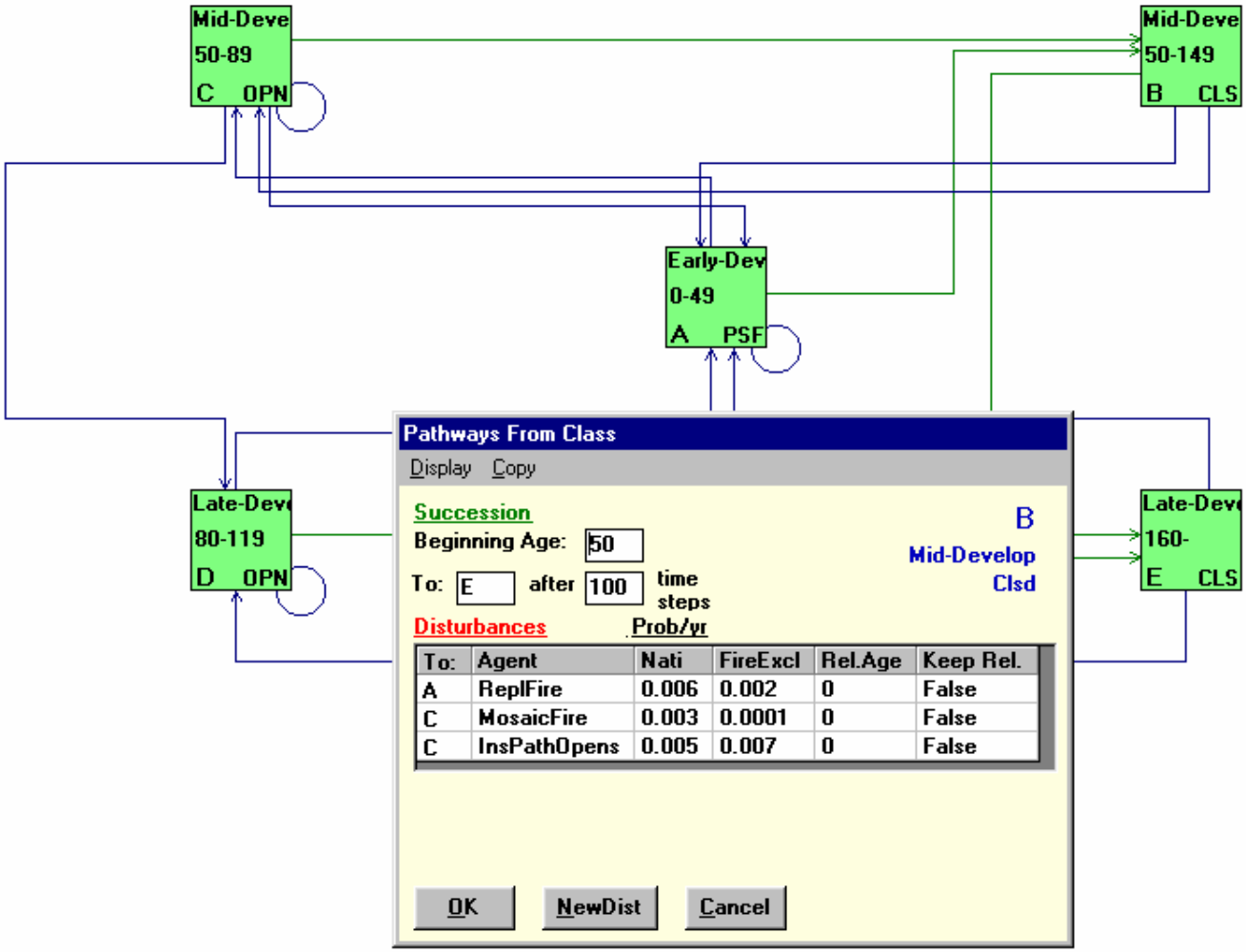
Reference Value Classification

All states can occur on a landscape - how much of each?

All class changes, All pathways

Reference Modeling



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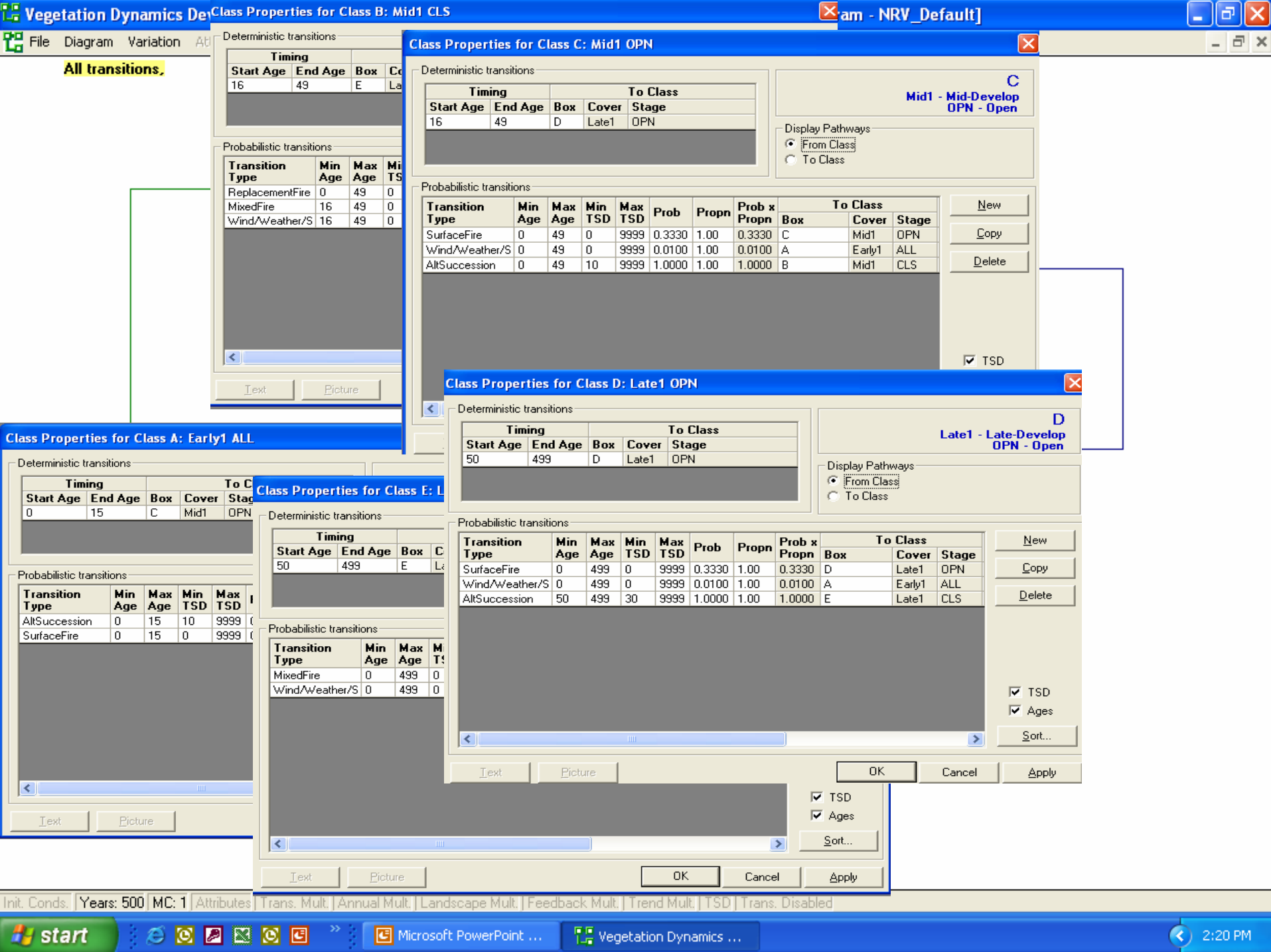
South Florida Models Developed During the Rapid Assessment Phase

- Everglades Sawgrass
- Everglades Marl Prairie
- Palmetto Prairie
- Pond Cypress Savanna
- Pine Rocklands
- South Florida Coastal Prairie-Mangrove Swamp
- South Florida Slash Pine Flatwoods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File Diagram Variation Attributes Run Model Results Help

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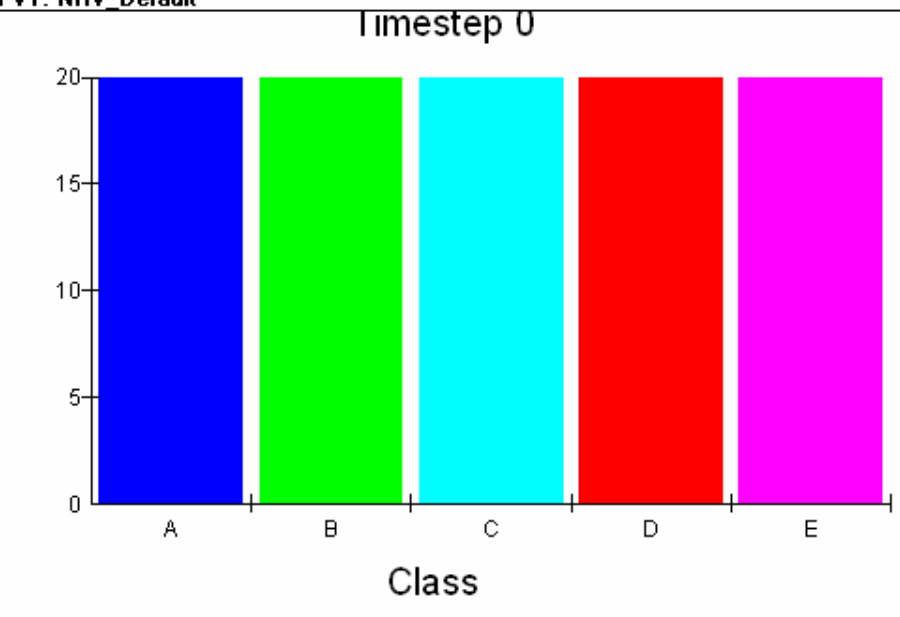

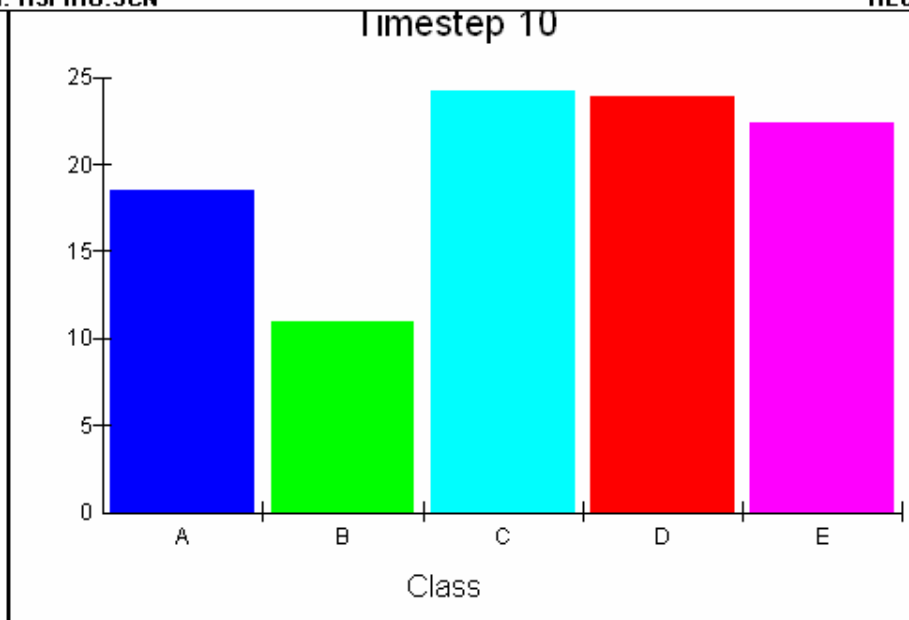

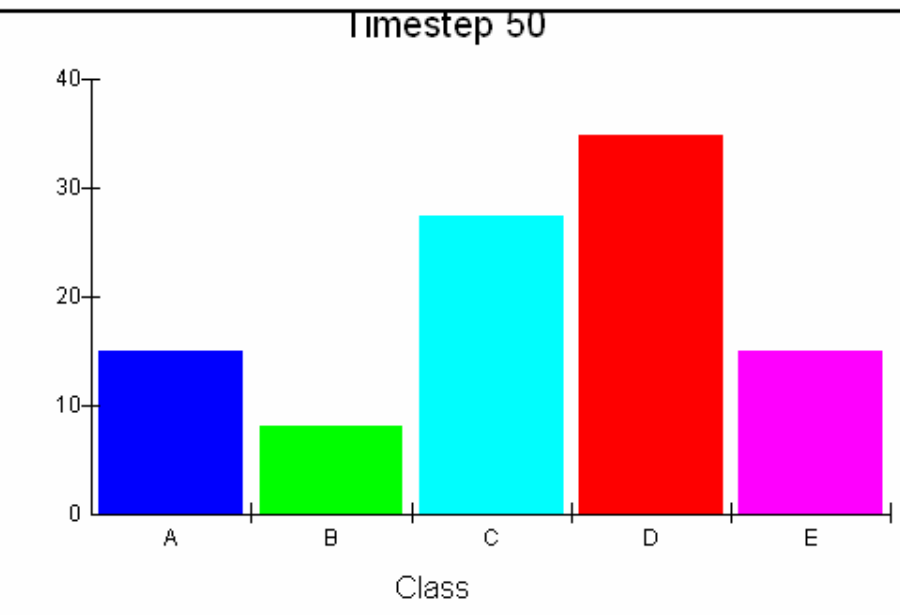

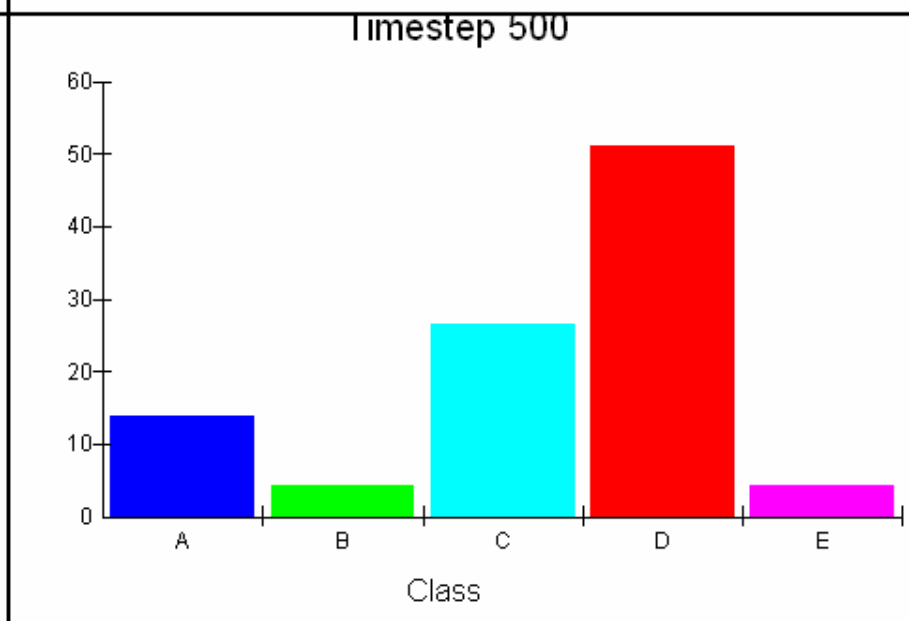

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Vegetation Dynamics Development Tool - [% Pixels Affected (Avg, Min, Max)]

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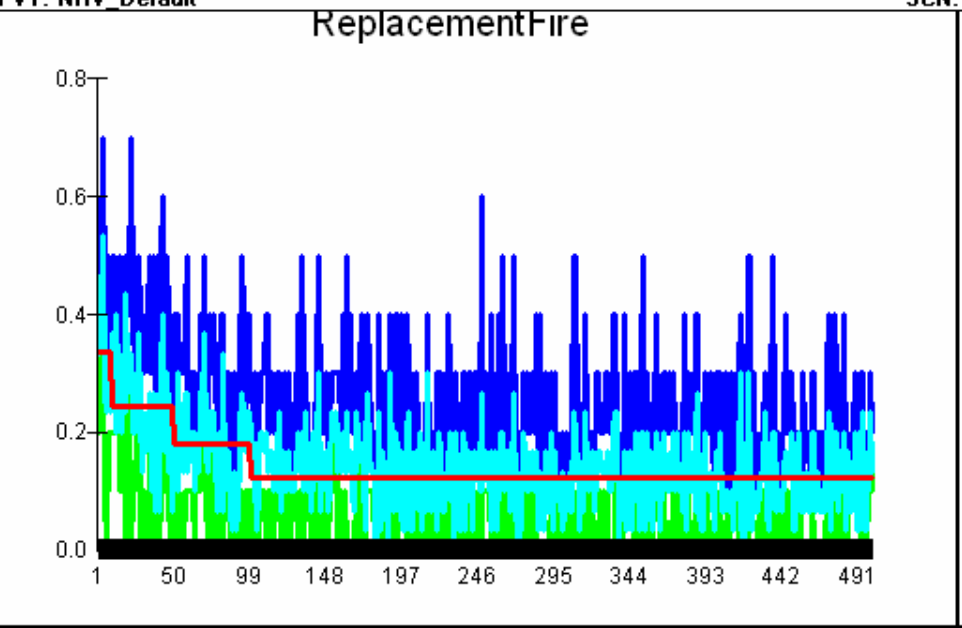

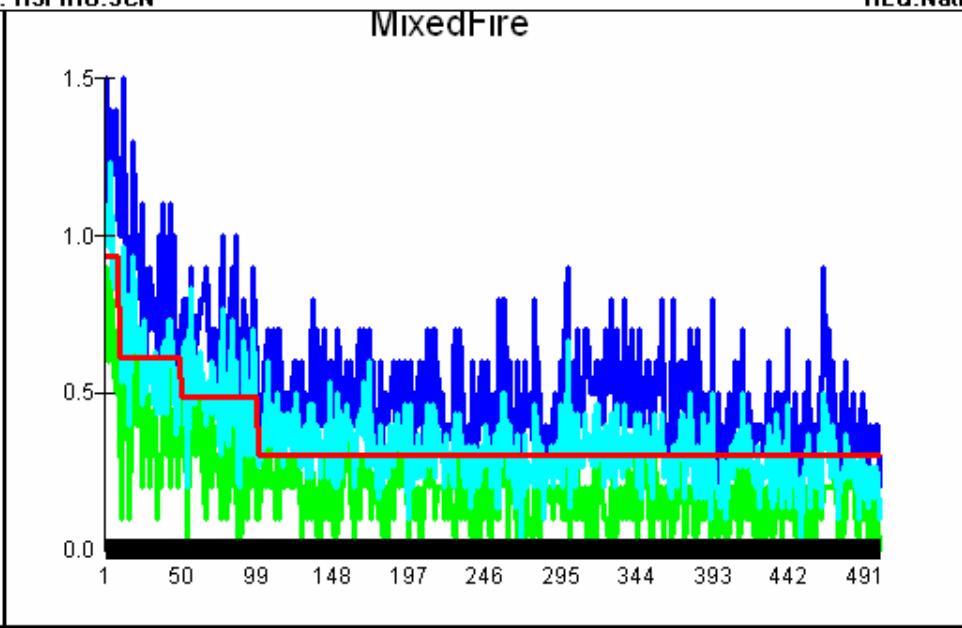

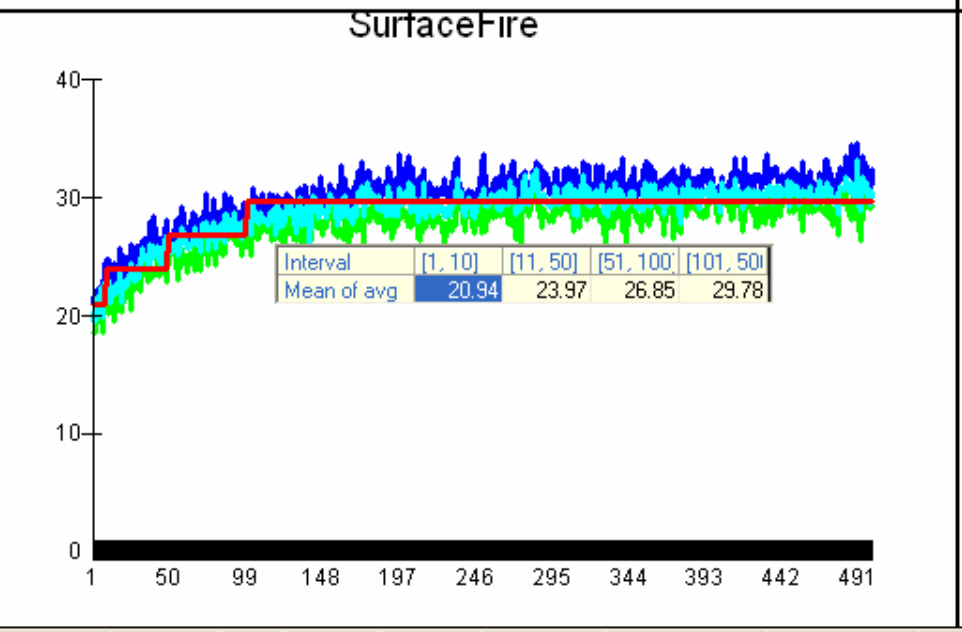

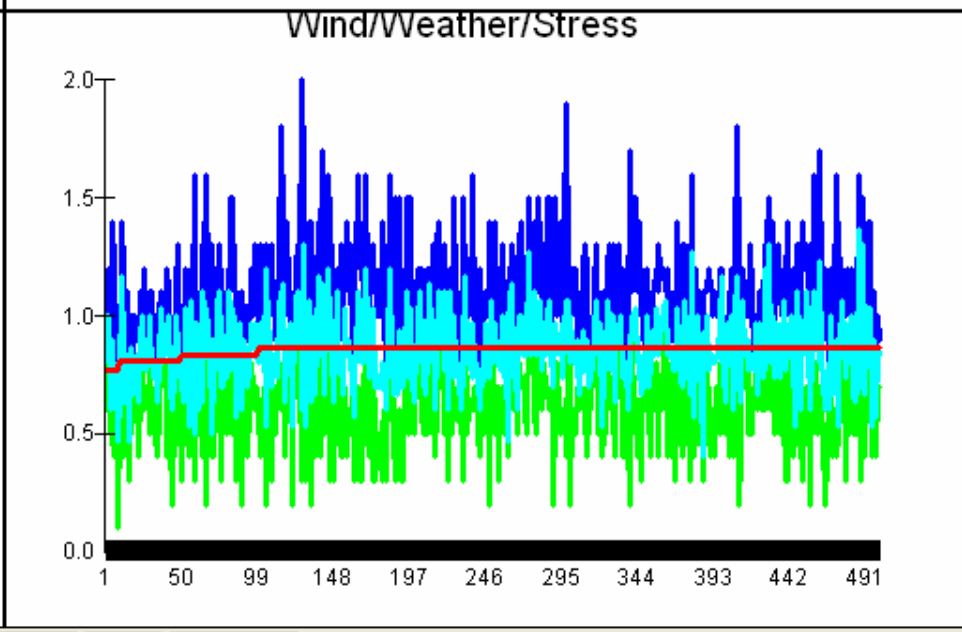

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Summary Statistics on South Florida Biophysical Settings

Biophysical Setting	Fire Regime Group	Class A	Class B	Class C	Class D	Class E	Surface Fire	Mixed Fire	Replacement Fire	Avg. Fire Size (ac)
Everglades Sawgrass	II	93	4	2	1	NA	3 yrs	NA	70 yrs	1000
Everglades Marl Prairie	I	10	35	15	40	NA	NA	13 yrs	16 yrs	1000
Palmetto Prairie	II	74	24	1	NA	NA	20 yrs	40 yrs	2 yrs	1000
Pond Cypress Savanna	I	15	10	75	NA	NA	35 yrs	75 yrs	120 yrs	1200
Pine Rocklands	I	15	5	25	50	5	3 yrs	330 yrs	800 yrs	1500
Coastal Prairie-Mangrove Swamp	II	25	29	35	1	10	NA	80 yrs	25 yrs	500
Slash Pine Flatwoods	I	23	1	50	25	1	3 yrs	2000 yrs	50 yrs	1000

Models Available at www.landfire.gov

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LANDFIRE Management Applications

- Identify historical fire regimes and vegetation patterns
- Identify and quantify ecological targets
- Develop fire and conservation management plans
- Prioritize placement of fuel-reduction treatments
- Assess threats to conservation and management targets
- Model fire behavior and spread
- Inform the management of species
- Model alternative management scenarios

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Southeast Coastal Plain Status

- 24 Ecological models developed, edited, and peer reviewed for the Rapid Assessment in the Southeast Coastal Plain Region
- Ecological models for the entire nation are available at http://www.landfire.gov/Products_Rapid_Assessment.html
- LANDFIRE Rapid Assessment Rollout Conference February 28 through March 1, 2006 in Memphis, TN
- Two LANDFIRE application sites developed (Onslow Bight, NC and Wekiva-Ocala-Okefenokee, FL & GA)
- Strategy for development of the next generation of LANDFIRE models identified.

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Next Steps

- Develop the next generation of models for LANDFIRE
  - To begin during the first quarter of CY 2006
  - Based on ecological classifications for the southeast coastal plain, U.S., developed by NatureServe
  - Developed/refined by experts and peer reviewed
  - Approximately 90 ecological models required to cover 4 LANDFIRE zones in the Southeast U.S.
  - Conduct at least 1 model development workshop in each zone
- Continue development of the LANDFIRE Application Projects
- Tech Transfer