****DRAFT****

Fire Regime Condition Class (FRCC) Interagency Handbook Reference Conditions

Modeler: Mike Schafale **Date: June 3, 2004** **PNVG Code: LLSH**

Potential Natural Vegetation Group: Longleaf pine sandhills

Geographic Area: Southeastern Virginia to east Texas, south to central Florida.

Description: Dry woodland/savannas on excessively drained or other xeric soils, generally deep coarse sands or coarse sands underlain by clay, occasionally dense surficial clay or sandstone at the surface. Canopy strongly dominated by Pinus palustris. Xerophytic scrub oaks, usually Quercus laevis, sometimes mixed with Quercus marilandica, Quercus hemisphaerica, Quercus geminata, Quercus incana, or Quercus margarettiae, are present as sparsely scattered midstory individuals or clumps and shrub-size fire-sprouts under reference condition, but become denser with fire exclusion. Other less xerophytic oaks are absent or extremely rare. The ground cover is dominated by Aristida stricta over most of the range, but by Schizachyrium or Andropogon in places where Aristida stricta is absent. The herb layer has moderate density, with a variety of other xerophytic herbs present. Low shrubs are sparse in reference condition but can become dense with fire exclusion. Canopy trees are patchy in distribution, with regeneration in canopy gaps of ¼ acre or less in size, mid-successional clumps in patches similar size patches, and the oldest trees occurring as isolated individuals. The reference condition classes are aggregates of numerous patches well dispersed over the landscape. Canopy gaps are created by fire mortality, lightning, and wind throw at the scale of individual trees or several trees. Because of the irregular seed production of longleaf pine, canopy gaps may lack regeneration for several years.

This PNVG is distinguished from other longleaf pine-dominated groups by the presence of xerophytic oaks and absence of other oaks, and by the absence of mesophytic or wetland herbs. They are abundant in the Sandhills Region of North and South Carolina, and are scattered on relict beach ridge systems of the outer Coastal Plain and on sand dune systems associated with rivers. Rare extreme sandhills (sand barrens) are so excessively drained that all strata are low in density, leaving much bare sand even in the absence of fire. Fuels are too discontinuous to support regular fire. This model does not cover these extreme communities.

Uncharacteristic vegetation types include even-aged canopy stands in which age structure has been homogenized by logging or clearing, examples where loblolly or slash pine have replaced some or all of the longleaf pine, examples where midstory oaks and/or low shrubs have become dense due to inadequate burning, and examples where the grass-dominated ground cover has been lost due to soil disturbance or past canopy closure.

Fire Regime Description: Frequent surface fires, 2-5 years, generally burn across large expanses. Fires are usually low in intensity overall but will occasionally kill young regeneration patches and rarely kill individual older trees.

Vegetation Type and Structure

Class*	Percent of Landscape	Description
A: canopy gaps	15	Canopy gaps, most single tree to quarter acre size, with pine regeneration up to 15 years old or lacking pine regeneration because no mast year has occurred since the gap opened. Native grassy ground cover dominated by Aristida stricta. Tree

		cover 0 to 50%.
B: mid-seral closed	6	Patches, mostly ¼ acre or less, with canopy pines 15-75 years old, with a substantial component of mid-story hardwoods or of shrubs encroaching in the absence of fire. Hardwood/shrub cover greater than 50%. Canopy pine cover 25-75%.
C: mid- seral open	36	Patches, most ¼ acre or less, with canopy pines 15-75 years old, with little hardwood component and only sparse shrubs due to frequent fire. Aristida stricta-dominated ground cover. Canopy pine cover 25-75%.
D: late- seral open	39	Patches, most ¼ acre or less, with canopy pines 75 or more years old, with little hardwood component and only sparse shrubs due to frequent fire. Aristida stricta-dominated ground cover. Canopy pine cover 25-75%.
E: late- seral closed	4	Patches with canopy pines 75 or more years old, with a substantial component of hardwoods and/or shrubs in either the overstory or understory. Ground cover shrubby or sparse. Hardwood/shrub cover greater than 50%.
Total	100	

*Formal codes for classes A-E are: AESP, BMSC, CMSO, DLSO, and ELSC, respectively.

Fire Frequency and Severity

Fire Severity	Fire Frequency (yrs)	Probability	Percent, All Fires	Description
Replacement Fire	120	.008	2%	Most replacement is in class A. Older pines are very fire-resistant and mortality is uncommon.
Non-Replacement Fire	3.6	.28	98%	Low intensity surface fires in all classes.
All Fire Frequency*	3.4	.29	100	

*All Fire Probability = sum of replacement fire and non-replacement fire probabilities. All Fire Frequency = inverse of all fire probability (previous calculation).

Modeling Assumptions

- Primary dynamic is the gap phase regeneration of longleaf pine. The model classes are small patches widely interspersed on the landscape. Replacement means death of longleaf pines as single trees or small clumps.
- Most replacement fires occur in the earliest stage (class A). Older trees are very resilient to fire.
- Secondary dynamic (closed vs. open path) is the invasion or growth of scrub hardwood trees in small patches that escape fire. Individuals of scrub hardwoods may exist as shrub-sized sprouts in the open states.
- Once hardwoods are established, they slightly decrease probability of fire, but increase the probability that fires will kill the canopy pines.
- Once established, shrubs are not easily eliminated by single fires, but may sometimes be eliminated by multiple fires. We have simulated this by using mosaic fire to represent the last of a series of surface fires that eliminates invading hardwoods without killing canopy pines.
- "Open" path here refers to an open understory maintained by fire rather than large openings in the canopy.

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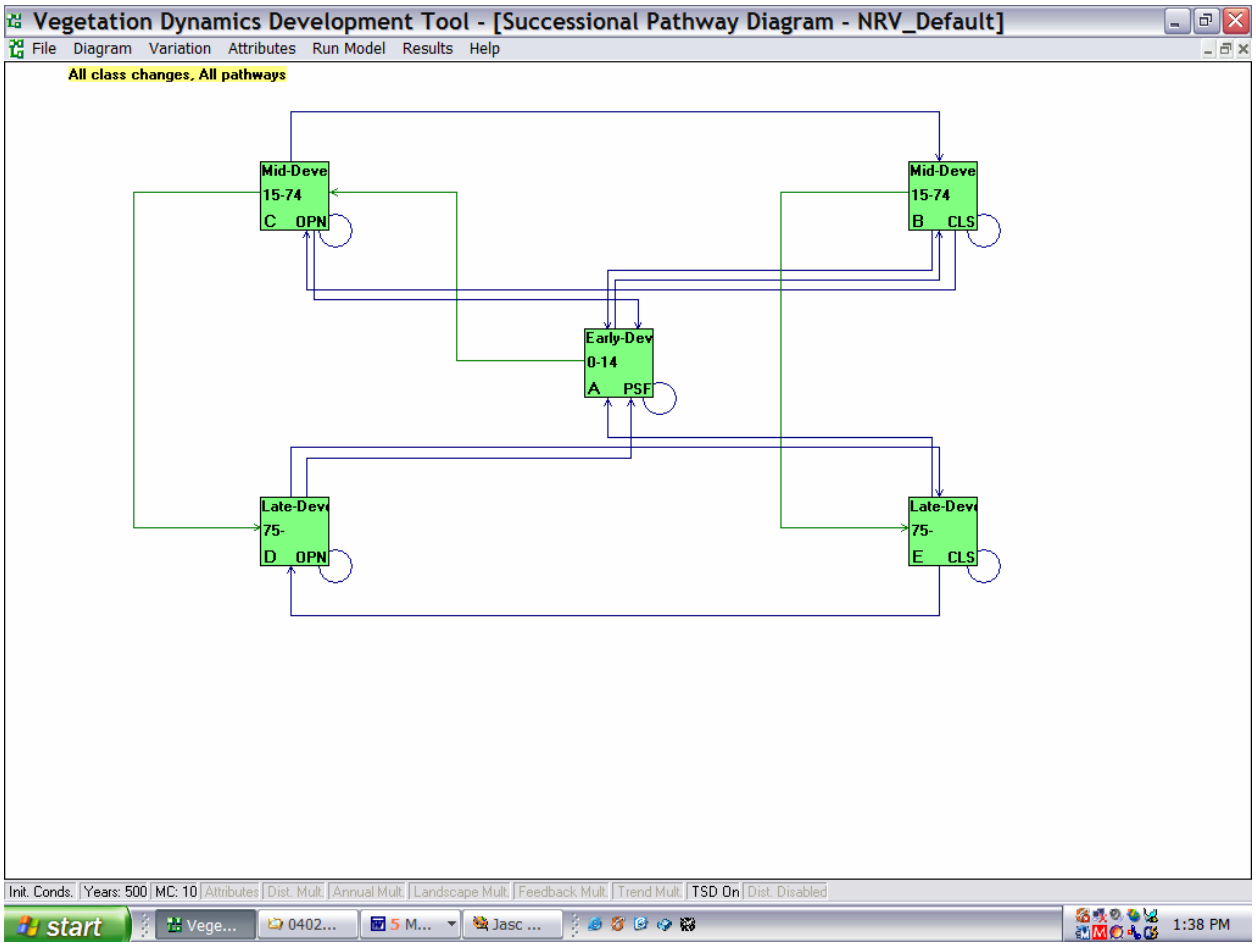
VDDT File Documentation

Include screen captures (print-screens) from any of the VDDT graphs that were used to develop reference conditions.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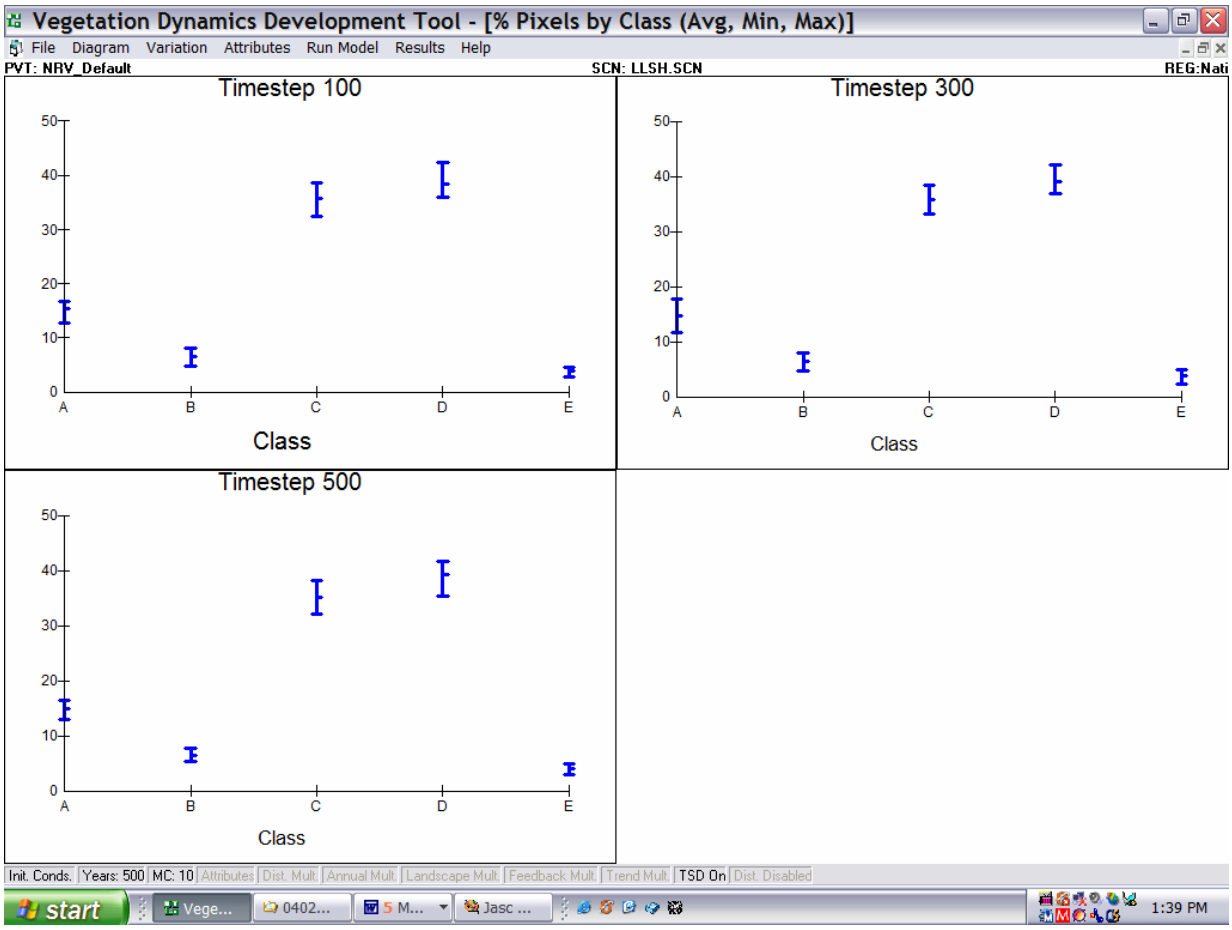
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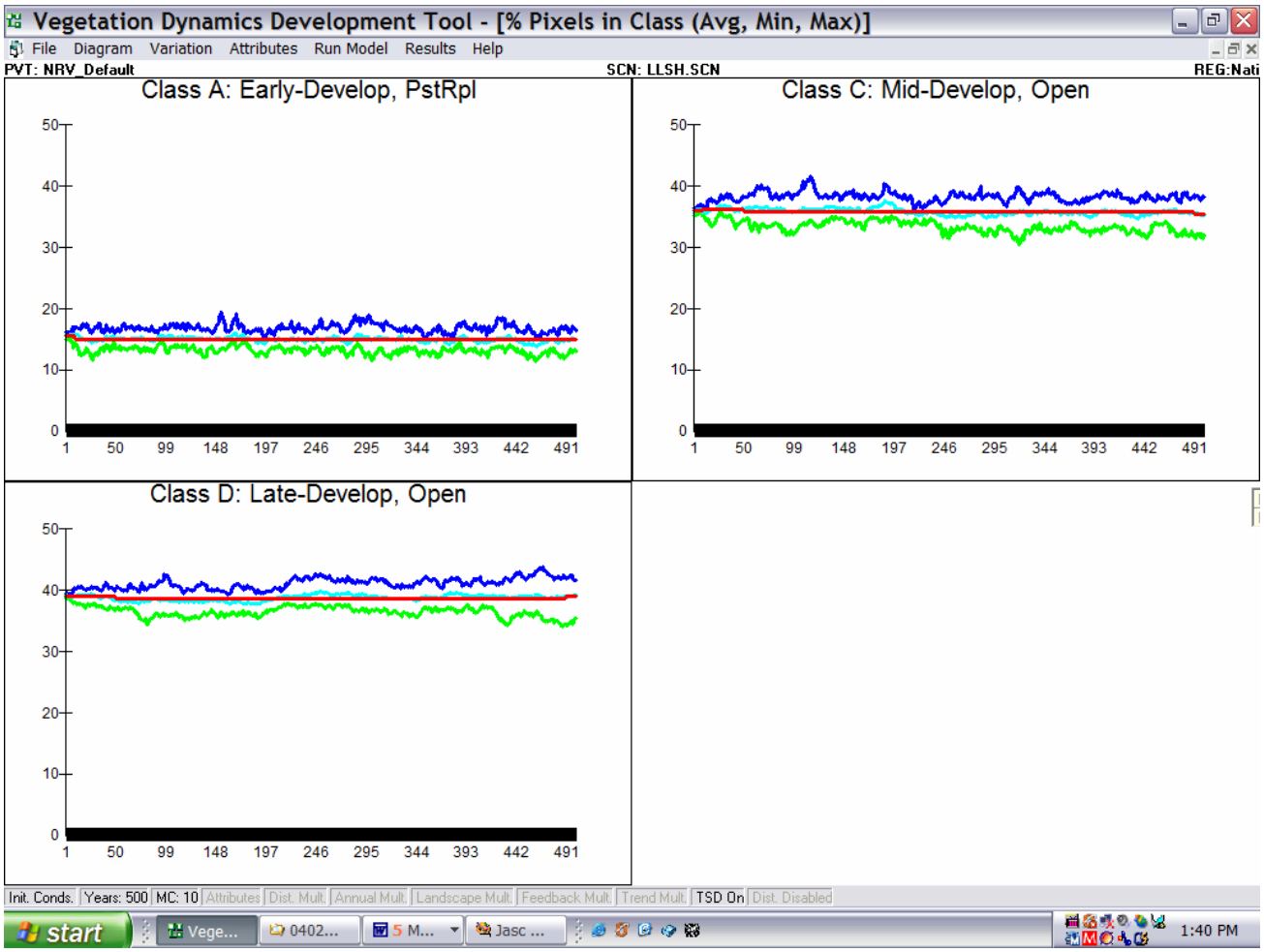
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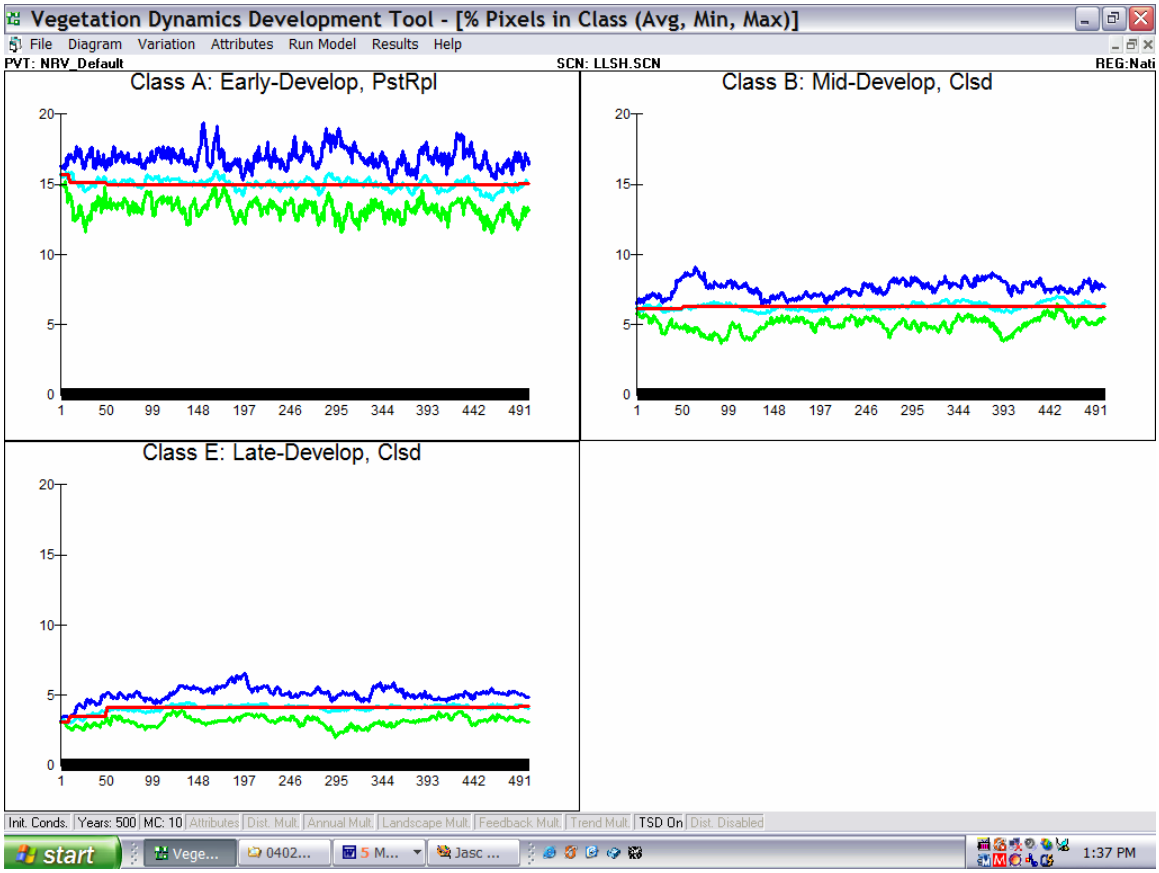
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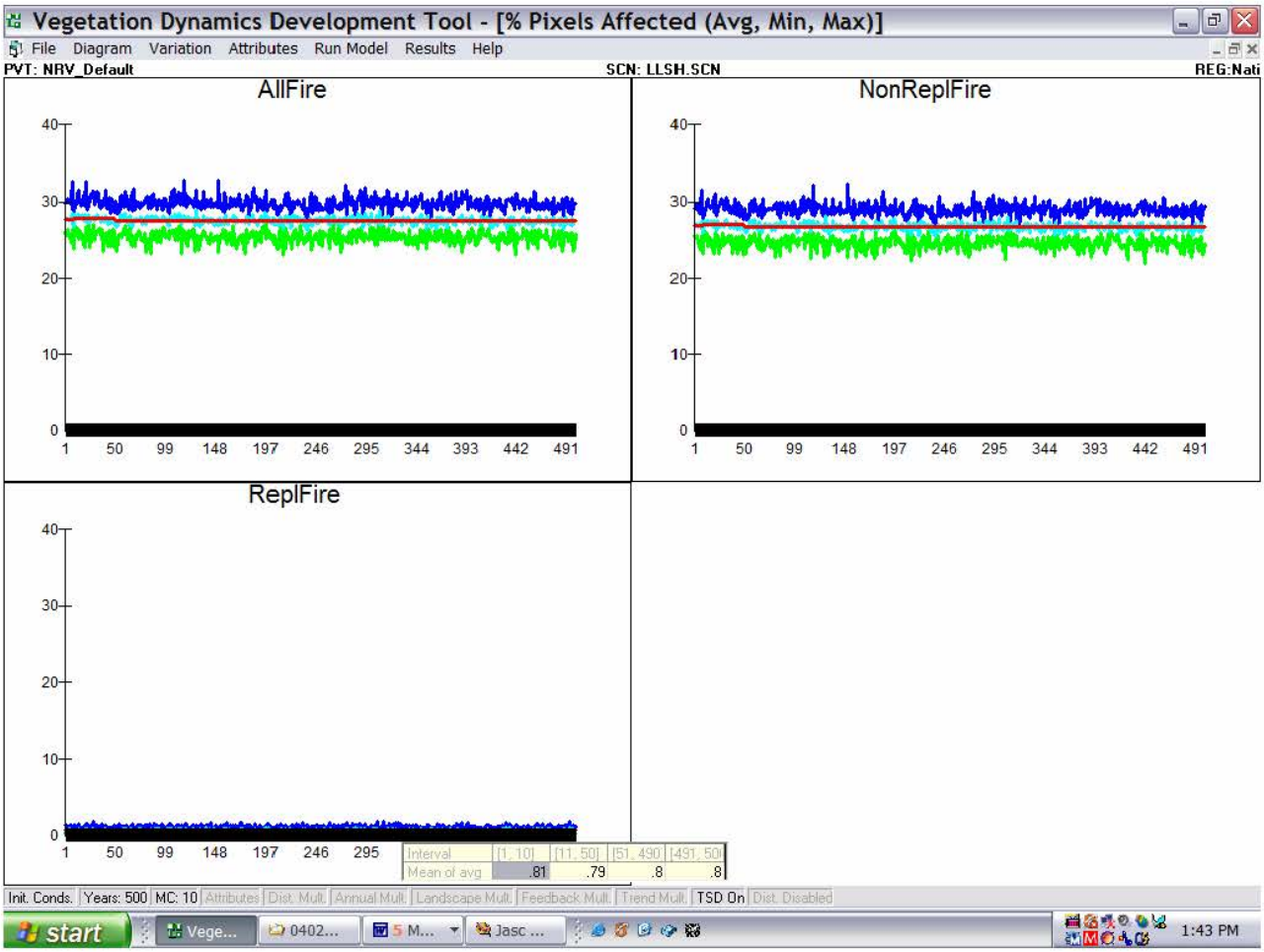
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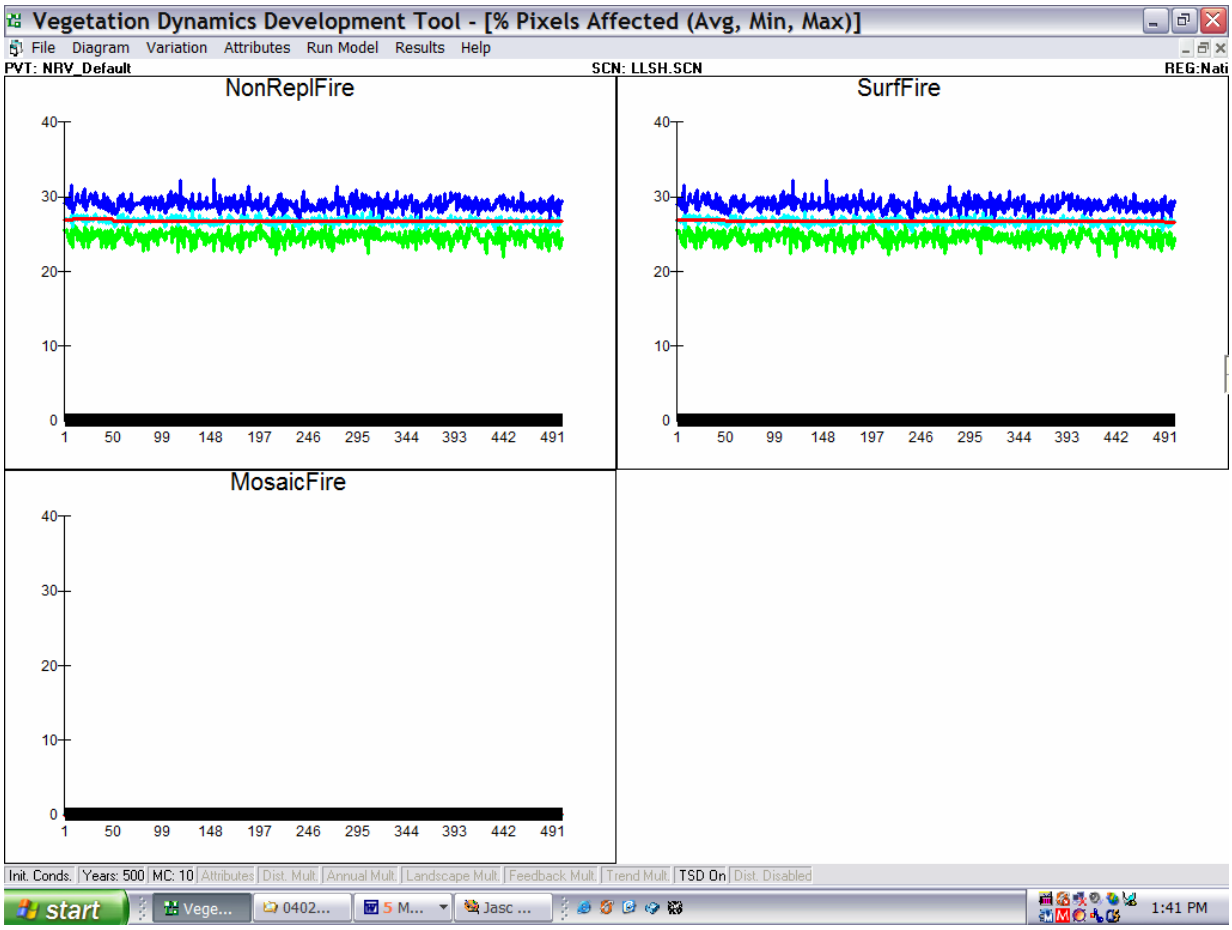
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