****DRAFT****

Fire Regime Condition Class (FRCC) Interagency Handbook Reference Conditions

Modeler: Sharon Hermann **Date: May 3, 2004** **PNVG Code: SWPS**

Potential Natural Vegetation Group: Southern (Gulf Coast) wet pine savanna

Geographic Area: Lower Coastal Plain from central North Florida to eastern Louisiana

Description: Wet woodlands/savannas on wet mineral soils; seasonally flooded (late winter to early spring), at least 2-3 times per decade. Very sparse canopy dominated by longleaf pine, sometimes mixed with sparsely scattered cypress and/or slash pine. In Mississippi in the mid-1800's, Hilgard described this PNVG as having scattered stunted longleaf (25 feet tall and generally less than 4 in dbh) with spacing of 50 feet between trees. There is generally little shrubby understory in reference condition sites, but a variety of hardwoods begin to encroach with infrequent and/or dormant season fire. The ground cover is dense and generally diverse. Grasses such as Aristida stricta (in the eastern part of the range), Ctenium aromaticum, and Sporobolus sp, and grass-like species (such as Cyperus sp, Juncus sp, Fimbristylis sp and Dichromena) are dominate and forb (including many species of carnivorous plants, orchids, and composites) are common and highly diverse, although legume are rarely present. The ground cover exhibits one of the highest small-scale (m^2) species richness recorded for any habitat-type, world-wide.

Unlike many other types of long-leaf pine types, distribution of trees are usually not strongly patchy, rather most trees are isolated, even as young individuals. Establishment of longleaf is likely to be limited by periodic flooding and slightly elevated microsites often serve as germination sites for longleaf.

This PNVG is distinguished from other longleaf pine-dominated by 1) the presence of wetland herbs and shrubs and 2) seasonally fluctuating hydrology that, in some years, spans periods of inundation contrasting with excessive drying that may produce cracking in the soil. It does not include the Gulf Coast flatwoods sites with Serenoa repens as a common species. This vegetation type occupies much less of it's original area (0.3%?? Folkerts) and is now considered a habitat type of special concern due to lack of fire and/or alteration of hydrology. Many of the larger original areas have been permanently degraded by bedding (in attempts to establish pine plantations), ditching or tiling to create drier areas for many types of uses including pastures and sod farms. Past establishment of plowed fire lanes may also slowly degrade the habitat by altering hydrology. Lack of fire has degraded much of the remaining areas

Uncharacteristic vegetation types include even-aged canopy stands in which age structure has been increased in density and/or homogenized by logging activities have replaced scattered longleaf with dense stands of loblolly or slash pine. In addition, there are many areas where 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 growing season surface fires, every 2-5 years, generally burn across large expanses. Fires are usually low intensity overall but will occasionally kill young individuals but rarely killing older trees. Because this PNVG was originally very open and with only sparse trees, lightning and wind may have been major sources of tree mortality. A major effect of burning is to minimize encroaching hardwood species (especially species such as titi)

from wetter adjoining areas. Periods of inundation may have been the dominant factor in keeping hardwoods from drier areas from encroaching.

Vegetation Type and Structure

Class*	Percent of Landscape	Description
A: post replacement	10	Scattered 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 grass or grass-like species. Tree cover 0 to 25%.
B: mid-seral closed	10	Scattered pines 15-75 years old, with a substantial component of mid-story hardwoods or of shrubs encroaching in the absence of fire. Grasses and forbs declining in cover and vigor. Hardwood/shrub cover greater than 50%. Canopy pine cover generally < 25%.
C: mid- seral open	40	Scattered pines 15-75 years old, with little hardwood component and only sparse shrubs due to frequent fire. Native grassy ground cover dominated by grass and grass-like species. Canopy pine cover generally < 25%.
D: late- seral open	40	Scattered canopy pines 75 or more years old, with little hardwood component and only sparse shrubs due to frequent fire. Grass and grass-like species-dominated ground cover. Canopy pine cover generally < 25%.
E: late- seral closed	< 1	Canopy pines 75 or more years old, with a substantial component of hardwoods and/or shrubs in either the overstory or understory. Forbs and grasses sparse. Hardwood/shrub cover greater than 50%. Canopy pine cover generally < 25%.
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	50?	.02	1%	Most replacement is in class A. Older pines are very fire-resistant and mortality is uncommon.
Non-Replacement Fire	3	.33	99%	Low intensity surface fires in all classes.
All Fire Frequency*	3	.35	100%	

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

References

Brown, James K.; Smith, Jane Kapler, eds. 2000. Wildland fire in ecosystems: effects of fire on flora. Gen. Tech. Rep. RMRS-GTR-42-vol. 2. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 257 p.

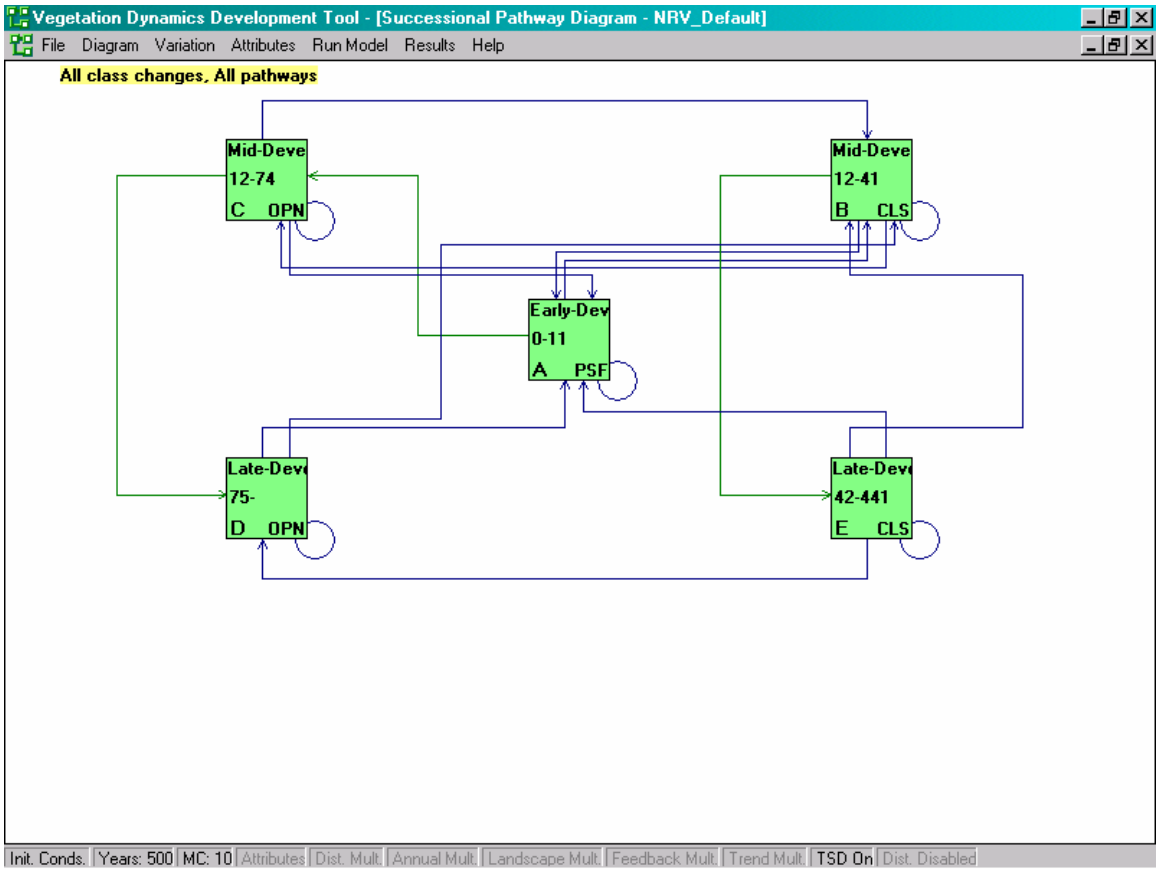
Schmidt, Kirsten M, Menakis, James P., Hardy, Colin C., Hann, Wendel J., Bunnell, David L. 2002. Development of coarse-scale spatial data for wildland fire and fuel management. Gen. Tech. Rep. RMRS-GTR-87. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 41 p. + CD.

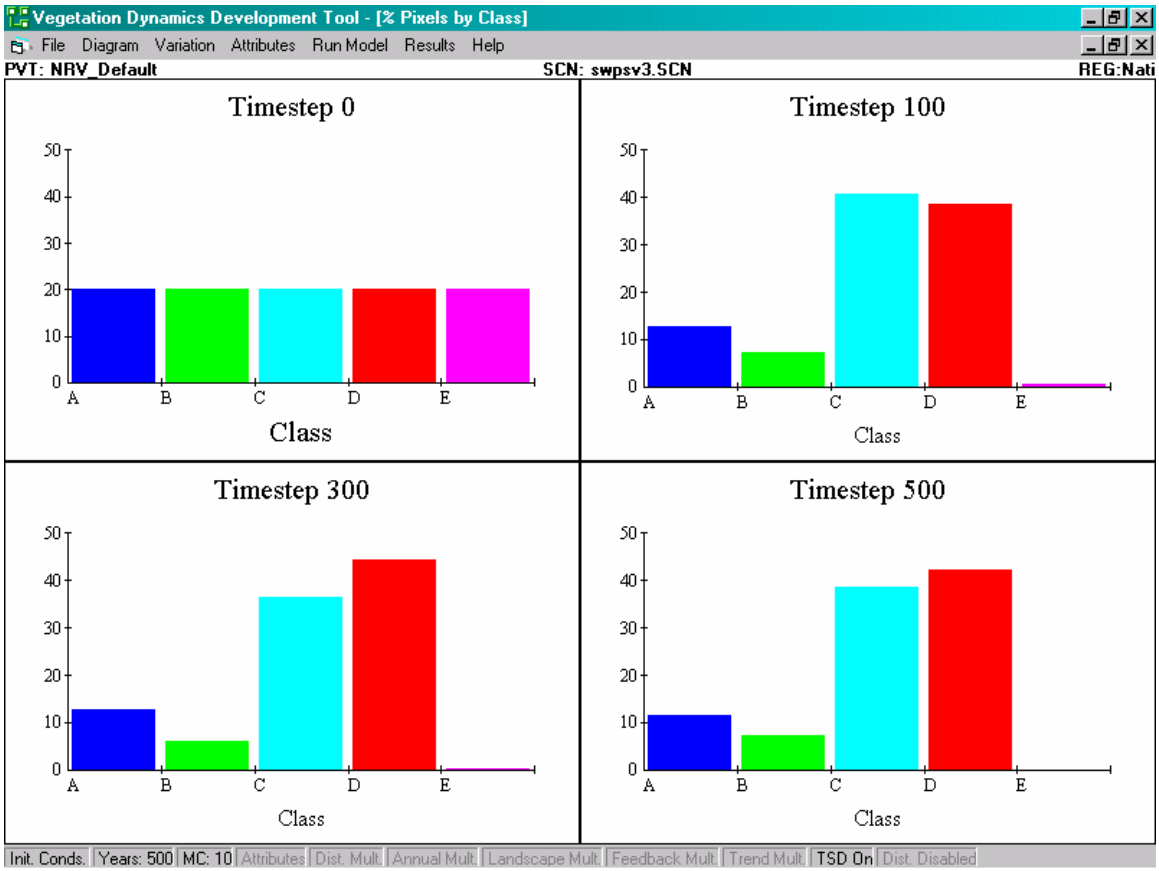
U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (2002, December). Fire Effects Information System, [Online]. Available: http://www.fs.fed.us/database/feis/.

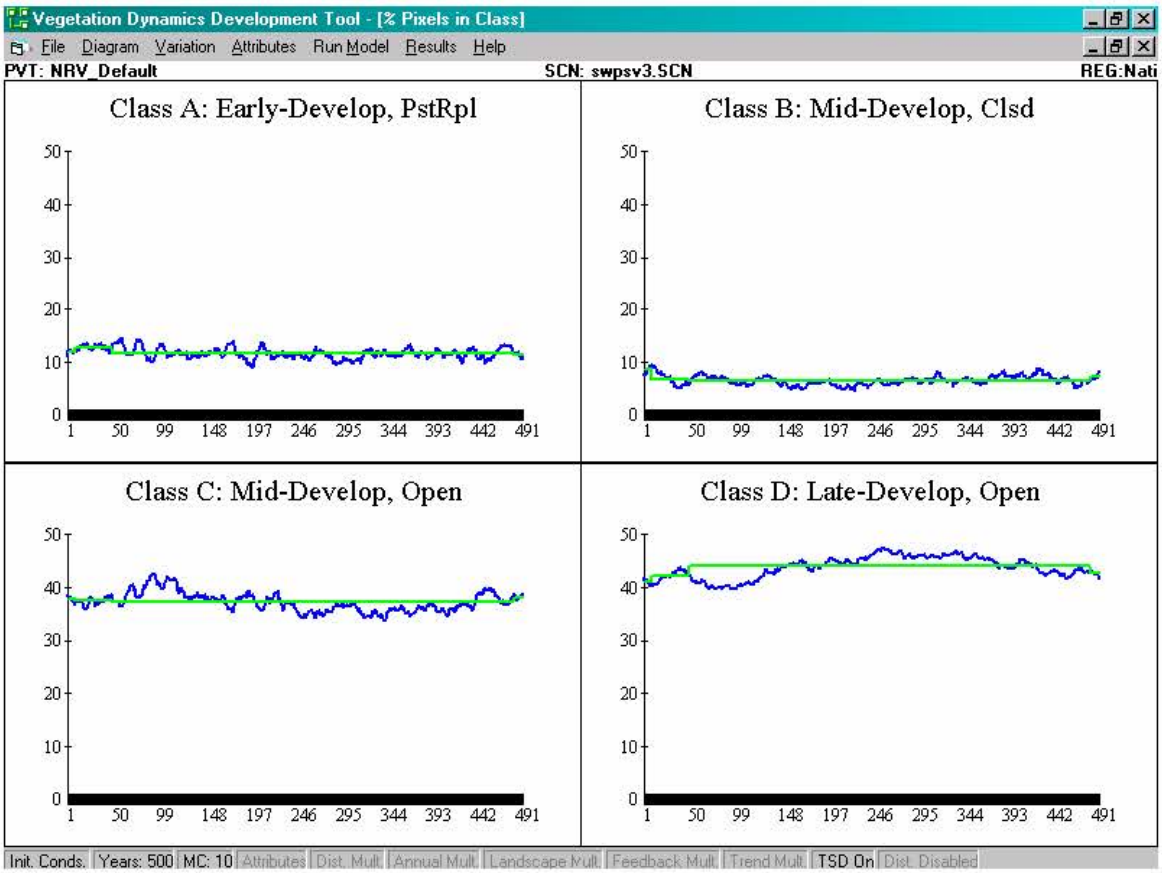
PERSONAL COMMUNICATION (if applicable):

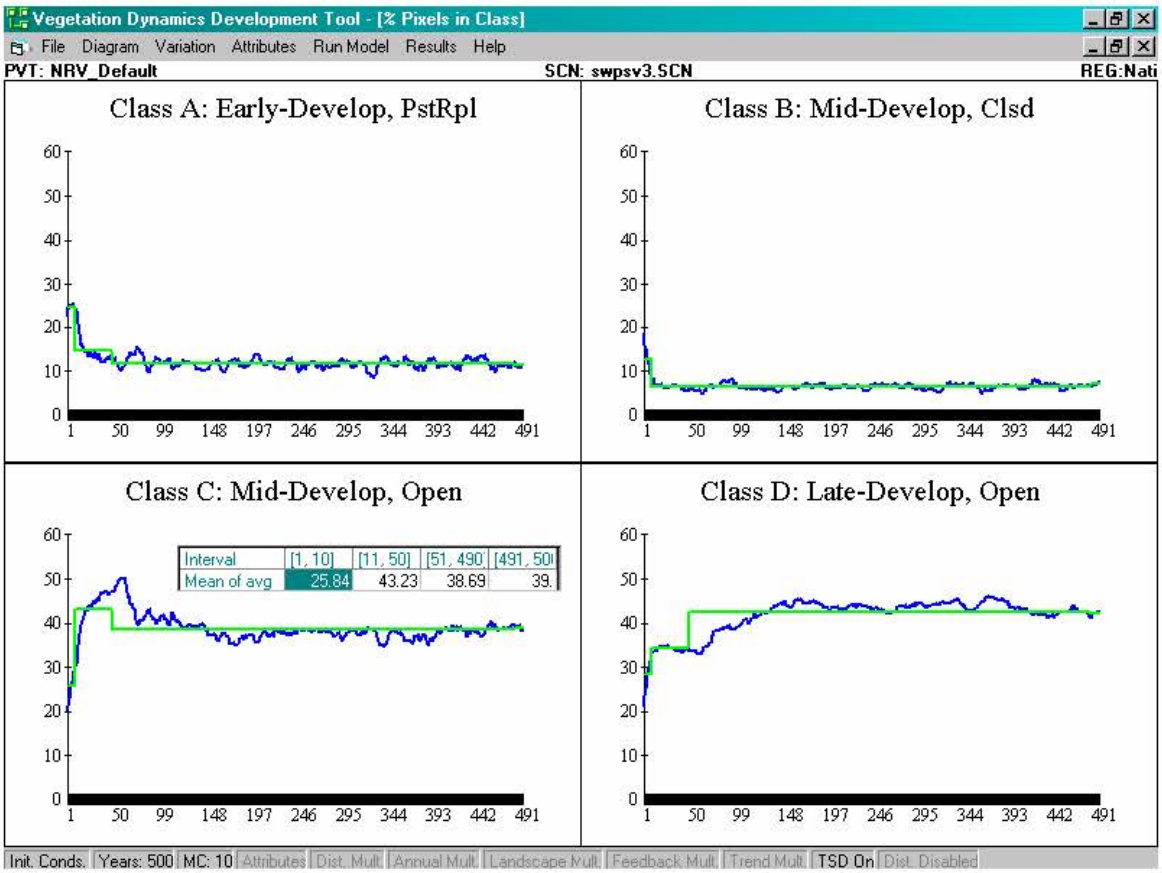
VDDT File Documentation
Include screen captures (print-screens) from any of the VDDT graphs that were used to develop reference conditions.

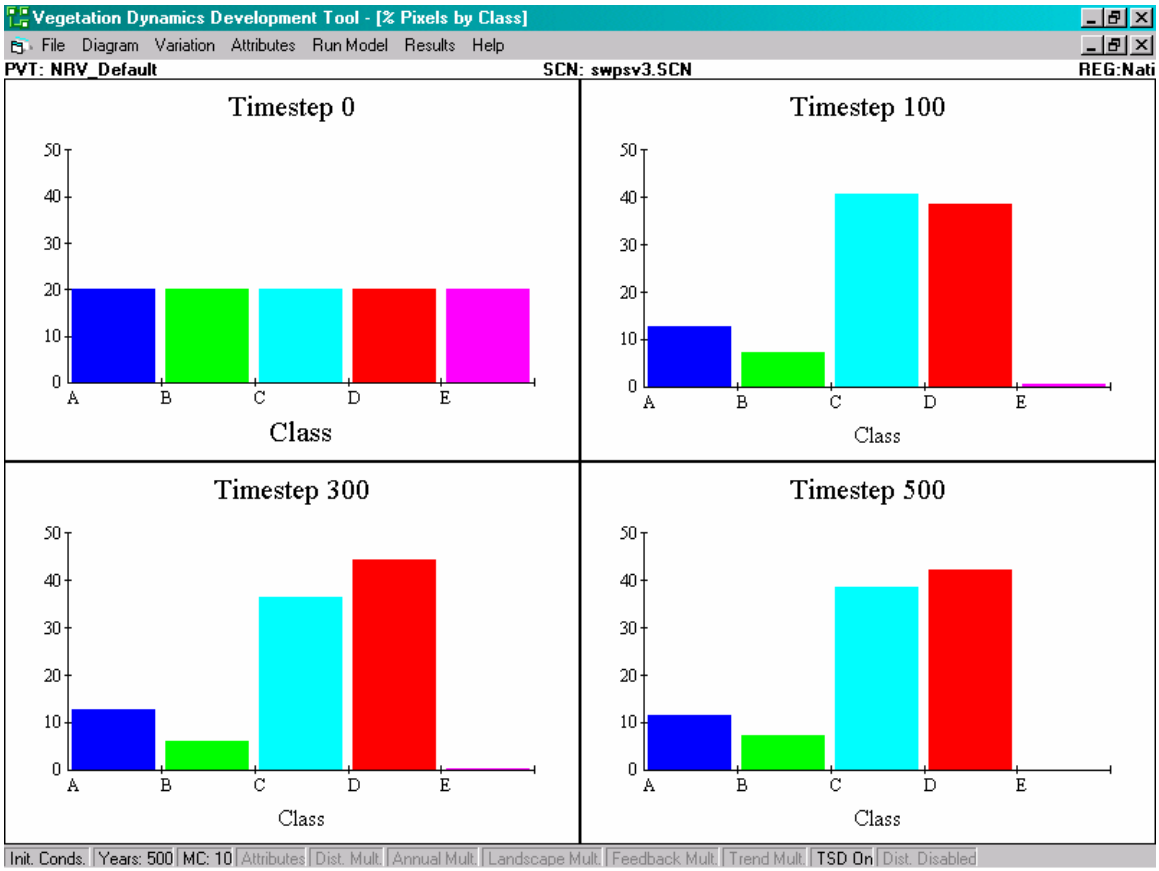
Modeling Assumptions:
Primary dynamic is the gap phase regeneration of longleaf pine. The model classes are small patches widely interspersed on the landscape. Replacement means death of longleaf pines as single trees or small clumps.
Most replacement fires occur in the earliest stage (class A). Older trees are very resilient to fire.
Secondary dynamic (closed vs. open path) is the invasion of shrubs and hardwood trees in patches that escape fire.
Once shrubs 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.


Vegetation Dynamics Development Tool - [Successional Pathway Diagram - NRV_Default]
File Diagram Variation Attributes Run Model Results Help
All class changes, All pathways
Mid-Deve
12-74
C OPN
Mid-Deve
12-41
B CLS
Early-Dev
0-11
A PSF
Late-Dev
75-
D OPN
Late-Dev
42-441
E CLS
Init. Conds.
Years: 500
MC: 10
Attributes
Dist. Mult.
Annual Mult.
Landscape Mult.
Feedback Mult.
Trend Mult.
TSD On
Dist. Disabled


Vegetation Dynamics Development Tool - [% Pixels by Class]
File Diagram Variation Attributes Run Model Results Help
PVT: NRV_Default
SCN: swpsv3.SCN
REG:Nati
Timestep 0
Timestep 100
Timestep 300
Timestep 500
50
40
30
20
10
0
A
B
C
D
E
Class
Init. Conds.
Years: 500
MC: 10
Attributes
Dist. Mult.
Annual Mult.
Landscape Mult.
Feedback Mult.
Trend Mult.
TSD On
Dist. Disabled


Vegetation Dynamics Development Tool - [% Pixels in Class]
File Diagram Variation Attributes Run Model Results Help
PVT: NRV_Default
SCN: swpsv3.SCN
REG:Nati
Class A: Early-Develop, PstRpl
Class B: Mid-Develop, Clsd
Class C: Mid-Develop, Open
Class D: Late-Develop, Open
0 10 20 30 40 50
1 50 99 148 197 246 295 344 393 442 491
Init. Conds.
Years: 500
MC: 10
Attributes
Dist. Mult.
Annual Mult.
Landscape Mult.
Feedback Mult.
Trend Mult.
TSD On
Dist. Disabled


Vegetation Dynamics Development Tool - [% Pixels in Class]
File Diagram Variation Attributes Run Model Results Help
PVT: NRV_Default
SCN: swpsv3.SCN
REG:Nati
Class A: Early-Develop, PstRpl
Class B: Mid-Develop, Clsd
Class C: Mid-Develop, Open
Class D: Late-Develop, Open
Interval [1, 10] [11, 50] [51, 490] [491, 50
Mean of avg 25.84 43.23 38.69 39.
0 10 20 30 40 50 60
1 50 99 148 197 246 295 344 393 442 491
Init. Conds. Years: 500 MC: 10 Attributes Dist. Mult. Annual Mult. Landscape Mult. Feedback Mult. Trend Mult. TSD On Dist. Disabled


Vegetation Dynamics Development Tool - [% Pixels by Class]
File Diagram Variation Attributes Run Model Results Help
PVT: NRV_Default
SCN: swpsv3.SCN
REG:Nati
Timestep 0
Timestep 100
Timestep 300
Timestep 500
50
40
30
20
10
0
A
B
C
D
E
Class
Init. Conds.
Years: 500
MC: 10
Attributes
Dist. Mult.
Annual Mult.
Landscape Mult.
Feedback Mult.
Trend Mult.
TSD On
Dist. Disabled

Pitcher plants, Sarracenia alata