Fire Regime Condition Class (FRCC) Interagency Handbook
Reference Conditions

Modeler: Bruce Davenport **Date:** 01/03/05 **PNVG Code:** MMHF

Potential Natural Vegetation Group: Mixed Mesophytic Hardwood Forest

Geographic Area: Occupies suitable sites on areas corresponding to Kuchler types 103 and 104. The described area for Kuchler type 103 generally includes the Cumberland Plateau and Cumberland Mountains physiographic sections, as well as, parts of the Allegheny Mountains and Unglaciated Allegheny Plateau sections. Type 104 includes large portions of the Ridge and Valley and Blue Ridge provinces. Occurrence for both Kuchler types includes the states of Alabama, Tennessee, Kentucky, as well as Virginia, West Virginia, Ohio, and Pennsylvania; Georgia, North Carolina and South Carolina.

Description: Mixed mesophytic forest communities, true mesic and "cove" hardwoods, are often cited as the most biologically diverse ecosystems in the United States, containing as many as 30 canopy tree species. Generally confined to lower north and east facing slopes or mesic coves below 5,000 feet in the mountains, they may occupy the entire landscape on gentler terrain where conditions are suitable. Although species dominance, or "association segregates," vary with location and conditions, characteristic tree species include: sugar maple, beech, hemlock, silverbell, yellow poplar, red maple, white ash, white oak, northern red oak, yellow birch, yellow buckeye, and basswood. Upper canopies are closed, except for mortality or disturbance-induced gaps. "Open" conditions, where they exist, describe a single canopy structure in the absence of a developed midstory. Gap size is typically less than one-tenth acre, although infrequent multiple-tree gaps may exceed one-half acre. The proportion of land area in gaps ranges from 3 to 24 percent. Shade tolerant species replace most gaps, but capture of larger gaps by shade intolerant species (e.g., yellow poplar and black cherry) may be frequent enough to maintain their presence as high as 3 percent in the main canopy. The existence of association segregates dominated by intolerant species suggests that large-scale disturbances occasionally play a role in forest structure and composition.

Fire Regime Description: Fire Regime Group III, infrequent, primarily low intensity surface fire with rare mosaic or replacement fire. Mean fire return interval (MFI) is about 50 years with wide year-to-year and within-type variation related to moisture cycles, degree of sheltering, and proximity to more fire-prone types. Anthropogenic fire considered and contributes to within-type MFI variation.

Vegetation Type and Structure

Class*	Percent of Landscape	Description
A: post replacement	5	0-10 years. Sprouts, seedlings, saplings, primarily of major overstory species in gaps created by wind, lightning, insect/disease, and less frequently, fire. Intolerant species (e.g., PRSE, LITU) confined to multiple-tree gaps.
B: mid-seral closed	25	10–79 years. Dominated by young to early mature canopy trees with some obligate mid and understory species in a multi-layered structure.
C: mid- seral open	5	10-79 years. Same overstory as B but generally open below a single canopy layer without well-developed midstory and with a generally low or minimal understory.

D: late- seral open	10	80-200+ years. Early to late mature trees that may exceed 100 feet in height. Dominant overstory species variable by location and stand history. Open underneath a closed, single-layer canopy without continuous midstory or robust understory.
E: late- seral closed	55	80-200+ years. Same overstory as D but with developed lower layers containing suppressed canopy species as well as other species confined to those levels.
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	800	0.001	5	Occurs in all age classes; somewhat more frequently in younger classes.
Non-Replacement Fire	55	0.019	95	
All Fire Frequency*	50	0.020	100	Slightly higher probability in open classes.

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

References

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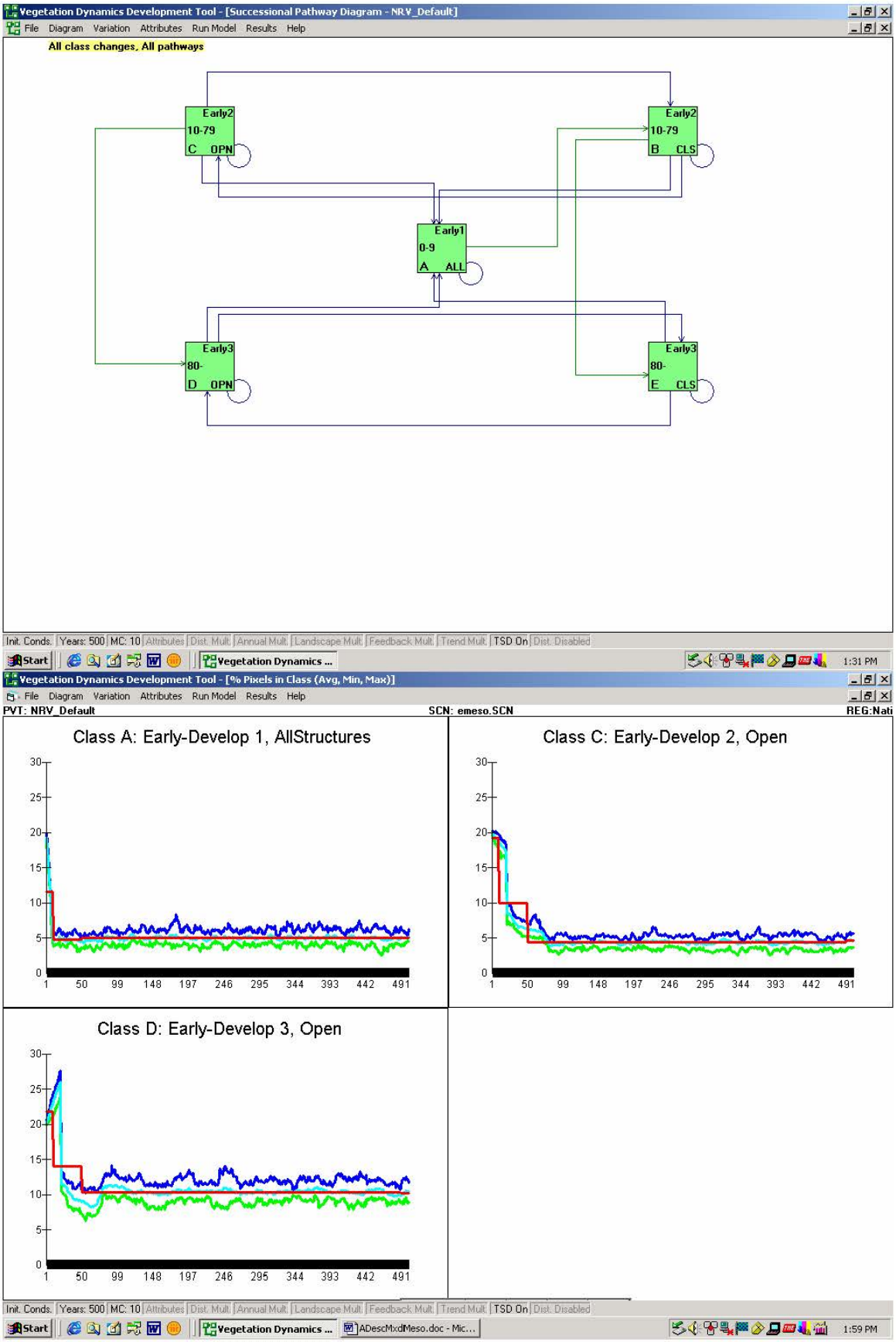
PERSONAL COMMUNICATION: Bob Dellinger, Mike Schafale and workshop participants (TTRS, June, 2004).

VDDT File Documentation: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Class C: Early-Develop 2, Open
Class D: Early-Develop 3, Open
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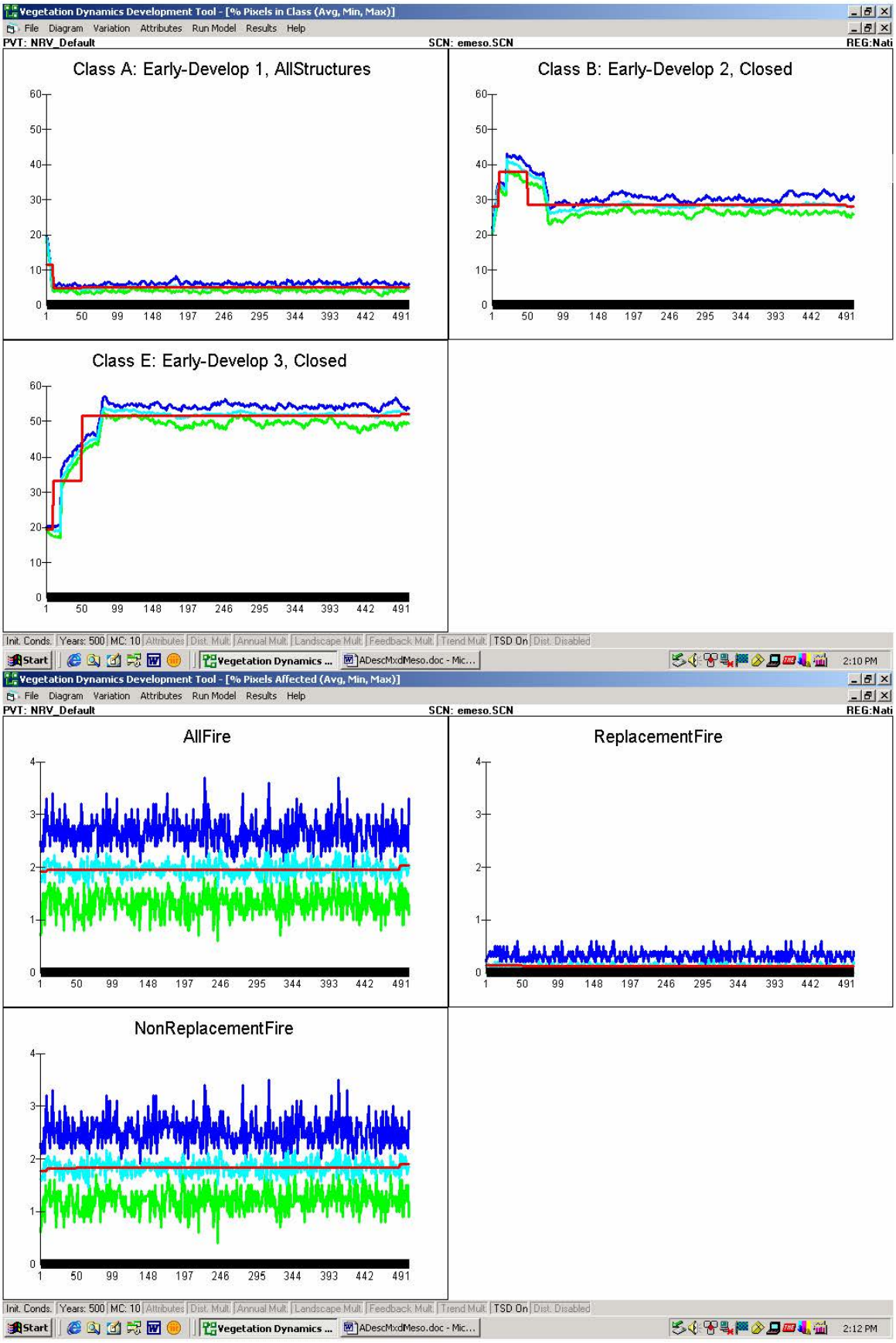
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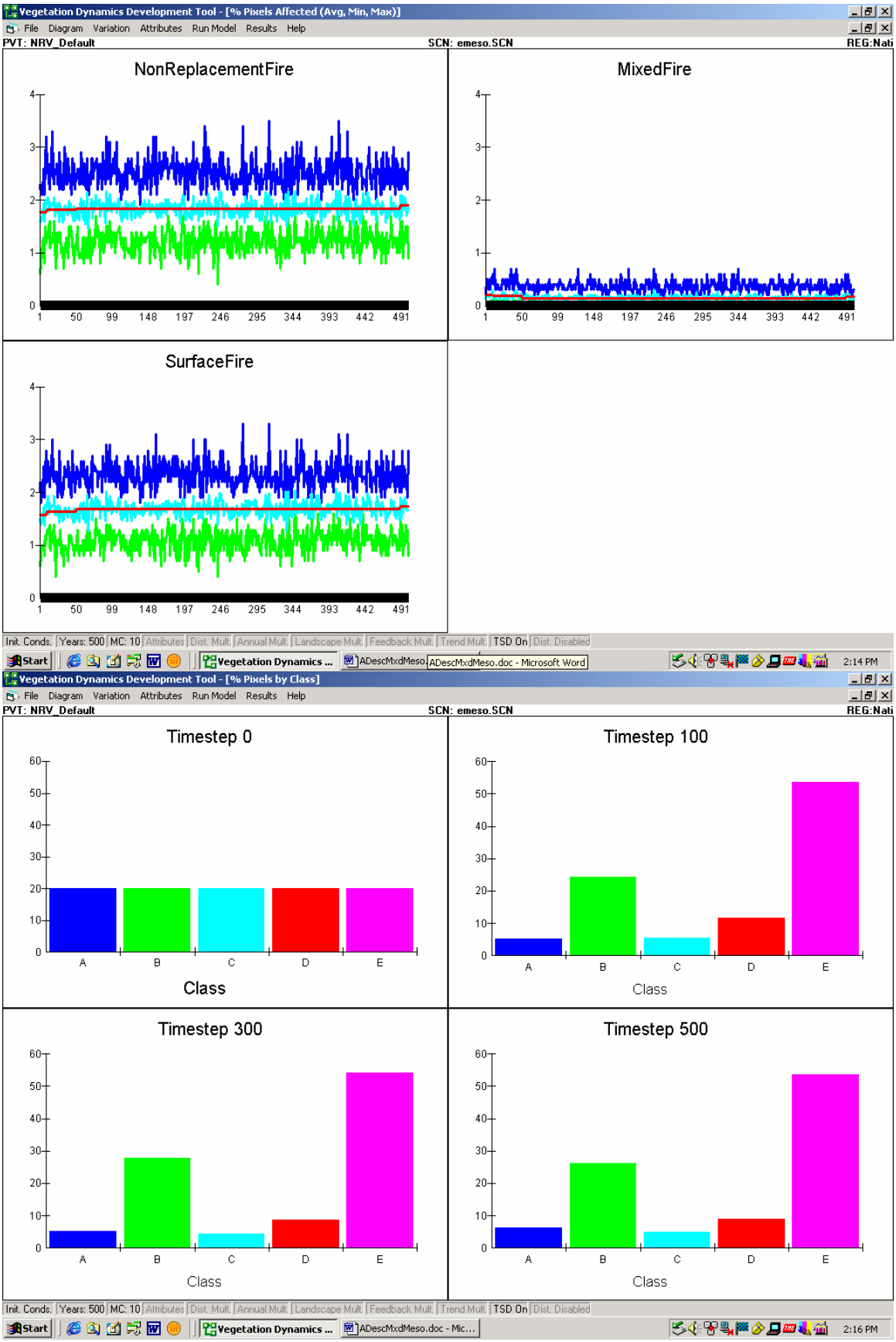
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