11/25/03 DRAFT

Fire Regime Condition Class (FRCC) Interagency Handbook
Reference Conditions

Modeler: Steve Barrett **Date:** 11/25/03 **PNVG Code:** SPFI5

Potential Natural Vegetation Group: Interior West Lower Subalpine Forest #2.

Geographic Area: Pacific Northwest and eastern portions of Central- and Southern Rockies.

Description: PNVG occurs in the lower subalpine zone on gentle to moderately steep terrain (e.g., 10-60% slope); relatively dry sites generally are dominated by lodgepole pine, and moist sites are often dominated by Engelmann spruce and subalpine fir, or by quaking aspen (Central/Southern Rockies).

Fire Regime Description: Fire Regimes V and IV: Primarily long-interval (e.g., 150-300 yr) stand replacement fires, with minor amount of terrain influenced by moderately long-interval (e.g., 50-100 yr) mixed severity fires.

Vegetation Type and Structure

Class	Percent of Landscape	Description
A: post replacement	20	Early succession after moderately long- to long interval replacement fires
B: mid-development closed	40	Shade intolerant- and mixed conifer saplings to poles (> 40% canopy cover)
C: mid- open	10	Primarily shade intolerant saplings to poles (<40% canopy cover)
D: late- open	5	Pole- and larger diameter shade intolerant- and mixed conifer species (<40% canopy cover) in small- to moderate size patches, generally on southerly aspects
E: late- closed	25	Pole- and larger diameter shade intolerant- and mixed conifer species (>40% canopy cover), in moderate- to large size patches, all aspects
Total	100	

Fire Frequency and Severity

Fire Frequency-	Modeled	Pct, All	Description

Severity	Probability	Fires	
Replacement Fire	.005	83	Replacement fires generally in E and D
Non-Replacement Fire	.001	17	Generally severe mixed severity fires (e.g., on non-steep terrain in C and D; in forest-type transition zones; at margins of replacement burns).
All Fire Frequency*	.006	100	

*Sum of replacement fire and non-replacement fire probabilities.

References

Agee, James K. 1993. Fire ecology of Pacific Northwest forests. Island Press, Washington DC, 493 p.

Agee, James K. 1994. Fire and weather disturbances in terrestrial ecosystems of the Eastern Cascades. Gen. Tech. Rep. PNW-GTR-320. Portland, OR: U.S. Department of Agriculture, Forest Service Pacific Nortwest Research Station. 52 p.

Agee, James K.; Finney, Mark; deGouvenain, M. 1990. Forest fire history of Desolation Peak, Washington. Canadian Journal of Forest Research 20: 350-356.

Aplet, Gregory H.; Laven, Rod D.; Smith, F.W. 1988. Patterns of community dynamics in Colorado Engelmann spruce and subalpine fir forests. Ecology 69:312-319.

Arno, Stephen F. 2000. Fire in western forest ecosystems. In: Brown, James K.; Smith, Jane Kapler, eds. 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: 97-120

Camp, Ann; Oliver, Chad; Hessburg, Paul; Everett, Richard. Predicting late-successional refugia pre-dating European settlement in the Wenatchee Mountains. Forest Ecology and Management 95: 63-77.

Clagg, H.B. 1975. Fire ecology in high-elevation forests in Colorado. M.S. Thesis, Colorado State University, Fort Collins, Colorado.

Eyre, F. H., ed. 1980. Forest cover types of the United States and Canada. Washington, DC: Society of American Foresters. 148 p.

Fahnestock, George R. 1976. Fires, fuel, and flora as factors in wilderness management: The Pasayten case. Tall Timbers Fire Ecology Conference 15: 33-70.

Franklin, Jerry, F.; Dryness, Charles T. 1973. Natural vegetation of Oregon and Washington. Gen. Tech. Rep. PNW-8. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 417 p.

Franklin, Jerry F.; Moir, William H.; Hemstrom, Miles H.; Greene, S. E.; Smith, Brad G. 1988. The forest communities of Mount Rainier National Park. National Park Service Monograph Series 19; U.S. Department of Interior, National Park Service.

Hessburg, Paul F.; Smith, Bradley G.; Kreiter, Scott D.; Miller, Craig A.; Salter, R. Brion; McNicoll, Cecilia H.; Hann, Wendel J. Historical and current forest and range landscapes in the Interior Columbia River Basin and portions of the Klamath and Great Basins. Part I: Linking vegetation patterns and landscape vulnerability to potential insect and pathogen disturbances. Gen. Tech. Rep. PNW-GTR-458. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 357 p. (Quigley, Thomas, M., ed., Interior Columbia Basin Ecosystem Management Project: scientific assessment).

Kipfmueller, Kurt F.; Baker, William L. 2000. A fire history of a subalpine forest in southeastern Wyoming, USA. Journal of Biogeography 27:71-85.

Kulakowski, D.; Veblen, T.T. 2002. Influences of fire history and topography on the pattern of a severe blowdown in a subalpine forest in northwestern Colorado. Journal of Ecology 90: 806-819.

Parker, A.J.; Parker, K.C. 1994. Structural variability of mature lodgepole pine stands on gently sloping terrain in Taylor Park Basin, Colorado. Canadian Journal of Forest Research 24:2020-2029.

Peet, R.K. 2000. Forests of the Rocky Mountains. Pages 75-122 in M. G. Barbour and W.D. Billings, editors, North American terrestrial vegetation. 2nd edition. Cambridge University Press, New York, New York.

Quigley, Thomas M.; Arbelbide, Sylvia J., tech. eds. 1997. An assessment of ecosystem components in the interior Columbia basin and portions of the Klamath and Great Basins: volume 1. Gen. Tech. Rep. PNW-GTR-405. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 4 vol. (Quigley,Thomas M., tech. ed.; The Interior Columbia Basin Ecosystem Management Project: Scientific Assessment).

Romme, William H.; Dennis H. Knight. 1981. Fire frequency and subalpine forest succession along a topographic gradient in Wyoming. Ecology 62: 319-326.

Sherriff, R.; Veblen, T.T.; Sibold, J.S. 2001. Fire history in high elevation subalpine forests in the Colorado Front Range. Ecoscience 8:369-380.

Sibold, J. 2001. The forest fire regime of an upper montane and subalpine forest, Wild Basin, Rocky Mountain National Park. M.S. Thesis, University of Colorado, Boulder, CO.

Romme, William H. 1982. Fire and landscape diversity in subalpine forests of Yellowstone National Park. Ecological Monographs 52(2): 199-221.

Romme, William H.; Dennis H. Knight. 1981. Fire frequency and subalpine forest succession along a topographic gradient in Wyoming. Ecology 62: 319-326.

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/ [Accessed 5/29/03].

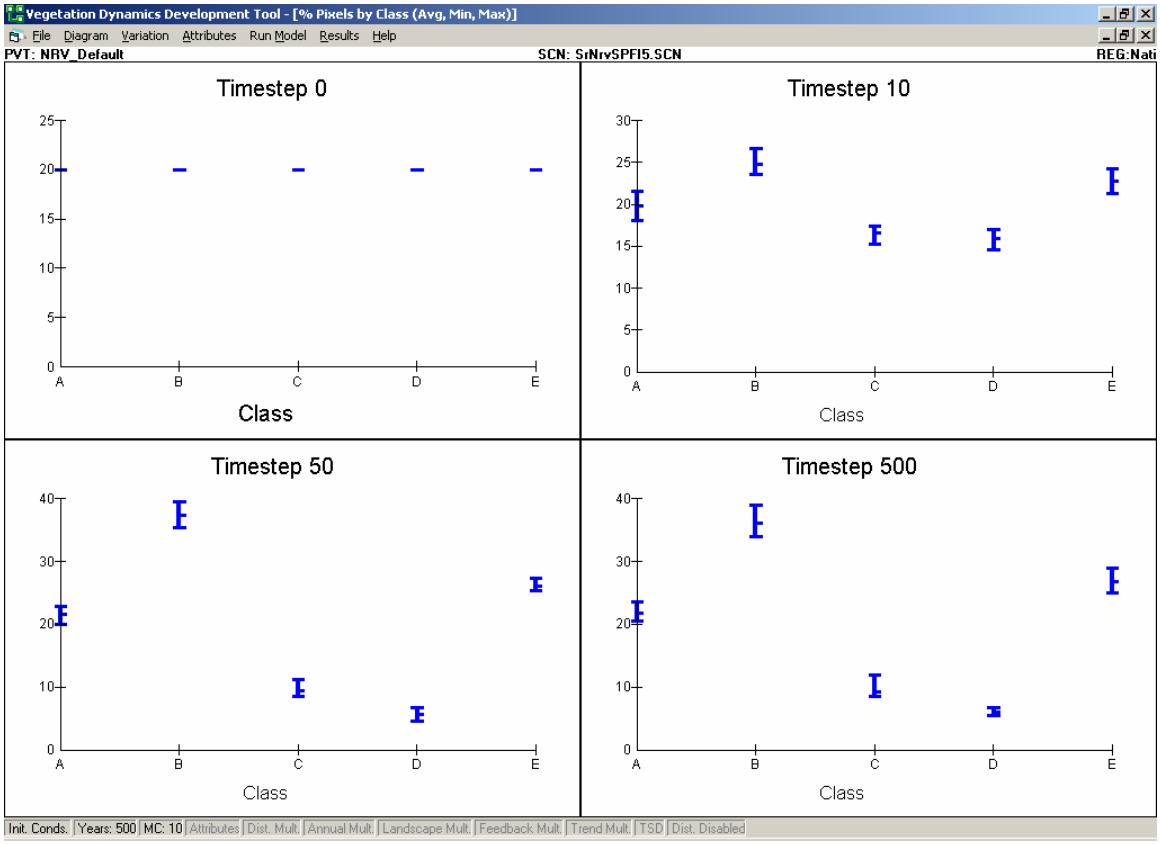
Veblen, T.T.; Hadley, K.S.; Nel, E.M.; Kitzberger, T.; Reid, M.S.; Villalba, R. 1994. Disturbance regime and disturbance interactions in a Rocky Mountain subalpine forest. Journal of Ecology 82:125-135.

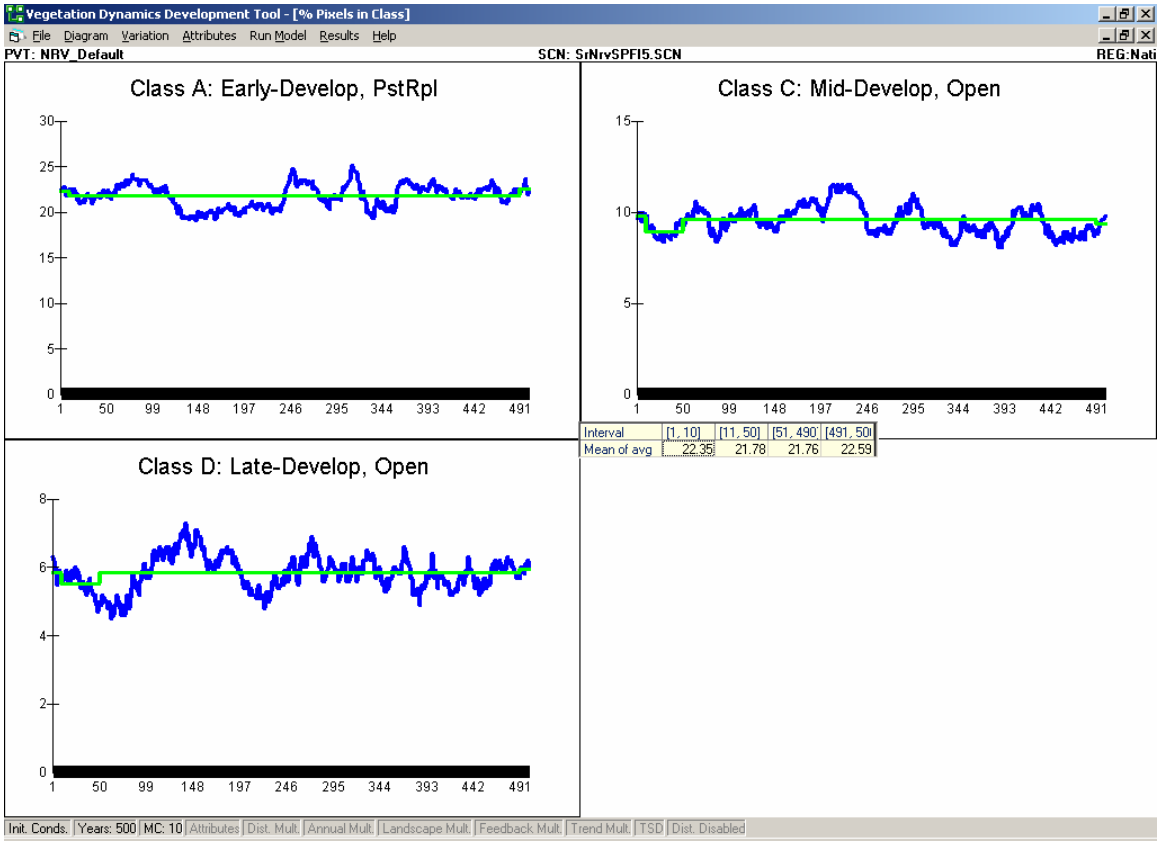
Veblen, T.T.; Kitzberger, T. 2002. Inter-hemispheric comparison of fire history: The Colorado Front Range, U.S.A. and the Northern Patagonian Andes, Argentina. Plant Ecology, in press.

Veblen, T.T.; Lorenz, D.C. 1991. The Colorado Front Range: a century of ecological change. University of Utah Press, Salt Lake City, Utah.

Whipple, S.A.; Dix, R.L. 1979. Age structure and successional dynamics of a Colorado subalpine forest. American Midland Naturalist 101:142-158.

VDDT Results

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Class A: Early-Develop, PstRpl
Class C: Mid-Develop, Open
Class D: Late-Develop, Open
Interval [1, 10] [11, 50] [51, 490] [491, 50
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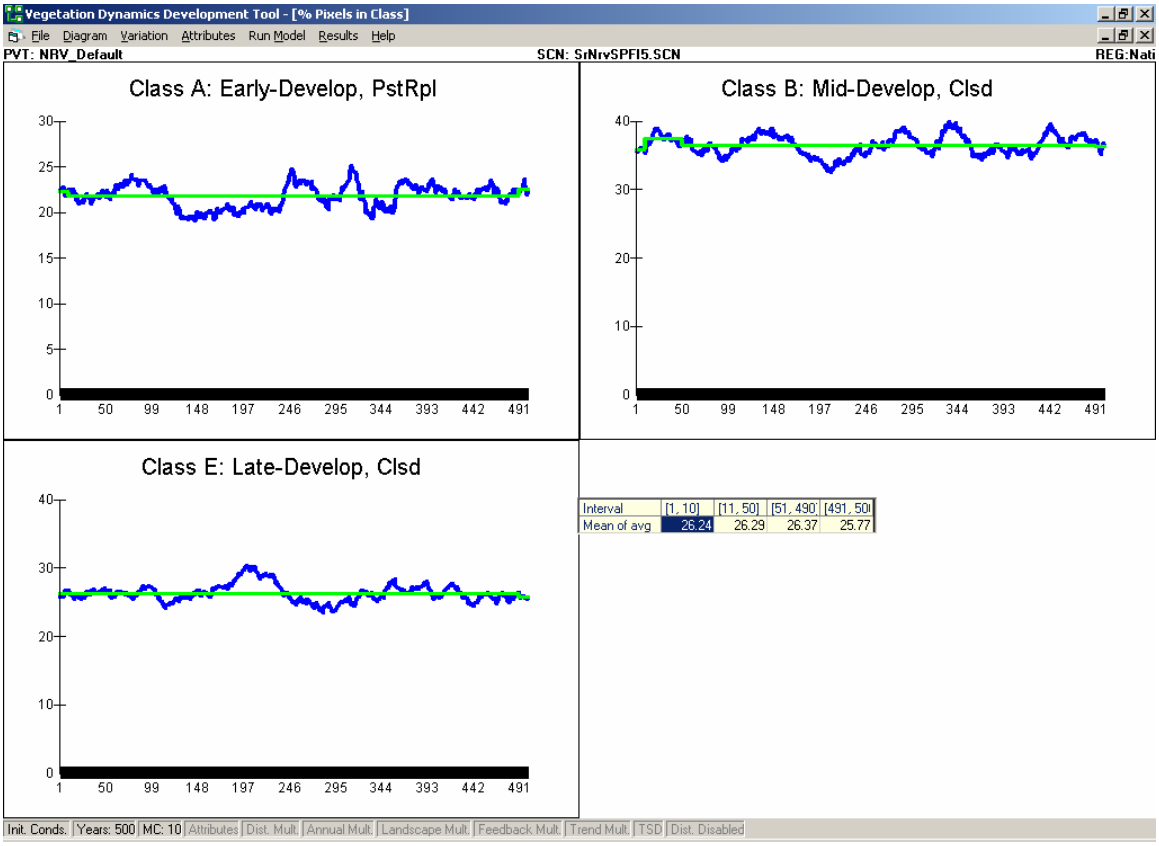
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Class A: Early-Develop, PstRpl
Class B: Mid-Develop, Clsd
Class E: Late-Develop, Clsd
Interval [1, 10] [11, 50] [51, 490] [491, 50
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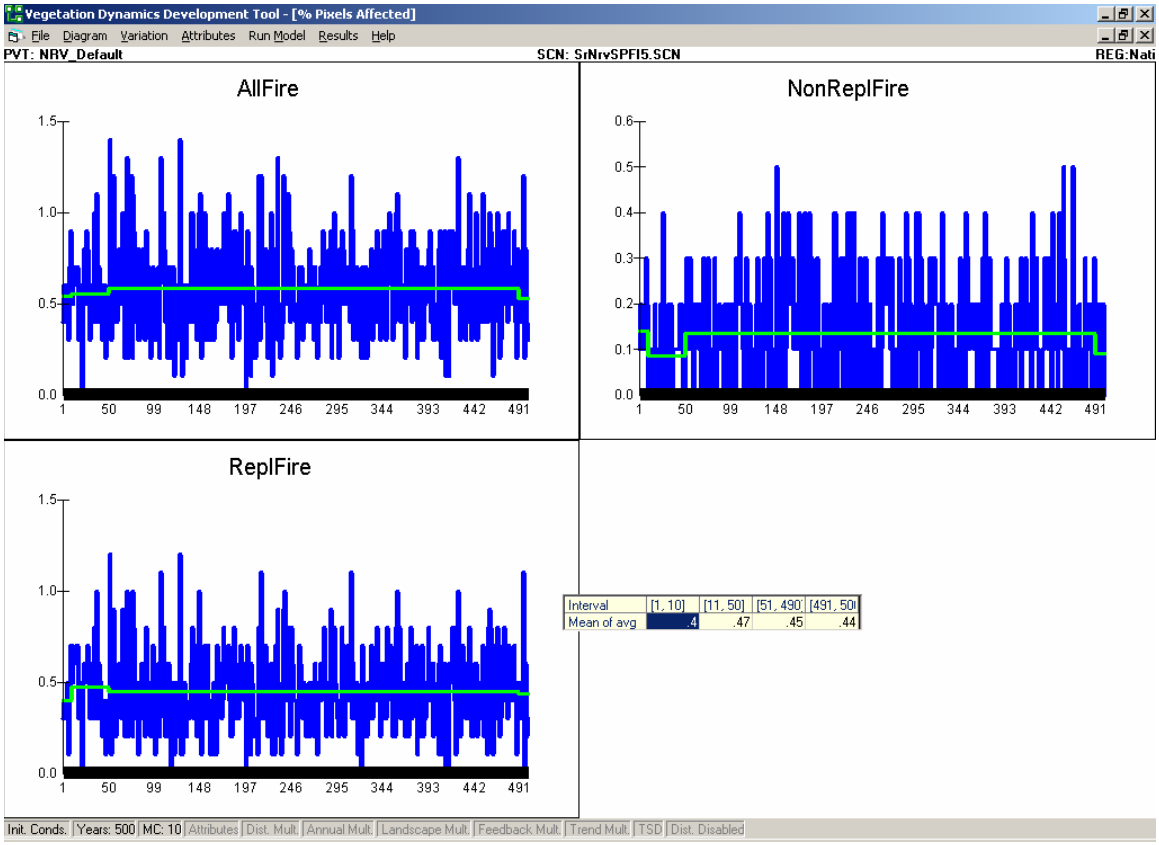
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