11/12/04 DRAFT

Fire Regime Condition Class (FRCC) Interagency Handbook Reference Conditions

Modeler: Wendel Hann, Reese Lolley, Cecilia McNicoll **Date:** 10/08/04 **PNVG Code:** PMGR2

Potential Natural Vegetation Group: Plains Mesa Grassland with Trees

Geographic Area: Southeastern Arizona and southwestern New Mexico.

Description: The Plains Mesa Grassland is described by Brown (1994) as occurring on open and exposed plains and the intermingled foothills subject to high heat and wind. The Plains Mesa Grassland with Tree (PMGR2) occurs at mid- to upper elevations (5000-7500 ft) in southern Arizona and New Mexico, in a zone above or in a mosaic with Madrean Evergreen Woodland (MAME), sometimes chaparral (CHAP5), and often adjacent to the Ponderosa Pine (PPIN) zone at upper elevations. In its southern range, PMGR2 occurs in a zone above desert grassland (DGRA2). PMGR2 have mild winters and hot, windy summers with precipitation ranging from about 12 to 18 inches. Almost half the precipitation occurs in the summer, with the other half occurring in winter and spring. In the northern extension and at higher elevations, were there is a stronger Great Basin influence, cooler summer and winter temperatures occur with overall less precipitation received predominantly in the winter and spring. Landforms typically include mesas, foothills, and mountains. Kuchler (1964) did not identify this type, but the closest fit to the east would be the Grama-Buffalo Grass (Type 65), and Gramma-tobosa Shrubsteppe (58) to the north. (In a previous version of the FRCC coarse-scale models, this vegetation type was included in the Plains Grassland [PGRA] model).

**Note*: This PNVG is somewhat broader than the Plains Mesa Grassland type defined by Dick-Peddie (1993)(i.e., includes a portion of that classification's Woodland and Savanna type).

Fire Regime Description: Fire Regime II (frequent replacement). Presettlement fire intervals likely ranged from 3-10 years long, with an estimated MFI of 5 years (Brown and Smith 2000, USDA 2002). Frequent fires promoted grass dominance, and inhibited associated shrubs and trees. Fires generally caused total replacement of the upper vegetation layer, followed by resprouting grasses with the onset of seasonal precipitation.

Vegetation Type and Structure

Class	Percent of Landscape	Description
A: Early -seral	2	Post-fire grass and fire-adapted forbs
B: Mid-seral Closed Grassland	30	Mid-seral productive closed grass on better soils and shifting from class C to B in moist years.
C: Mid-seral Open Grassland	60	Mid-seral less productive open grass on lower moisture holding soils and shifting from class B to C in drought years.
D: Late-seral Open Tree-Shrub/Grass	7	Late-seral open tree and shrub communities with grass understory and patches between trees where topo-edaphic and micro site conditions reduce fire frequency

		or severity so that trees and shrubs survive.
E: Late-seral Closed Tree/Shrub	1	Late-seral closed tree and shrub communities topo-edaphic and micro site conditions reduce fire frequency or severity so that trees and shrubs can survive.
Total	**100**	

Fire Frequency and Severity

Fire Frequency-Severity	Modeled Probability	Percent, All Fires	Description
Replacement Fire	.19	99	Replacement fires in A, B and C
Non-Replacement Fire	.01	1	Mosaic fires in classes D and E
All Fire Frequency*	.20	100	5-yr MFI overall (generally low variation)

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

References

Brown, David E., editor. 1982. Biotic communities of the American Southwest–United States and Mexico. Desert Plants 4(1-4): 1-342.

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.

Dick-Peddie, W. A., 1993. New Mexico vegetation, past, present, and future. University of New Mexico Press.

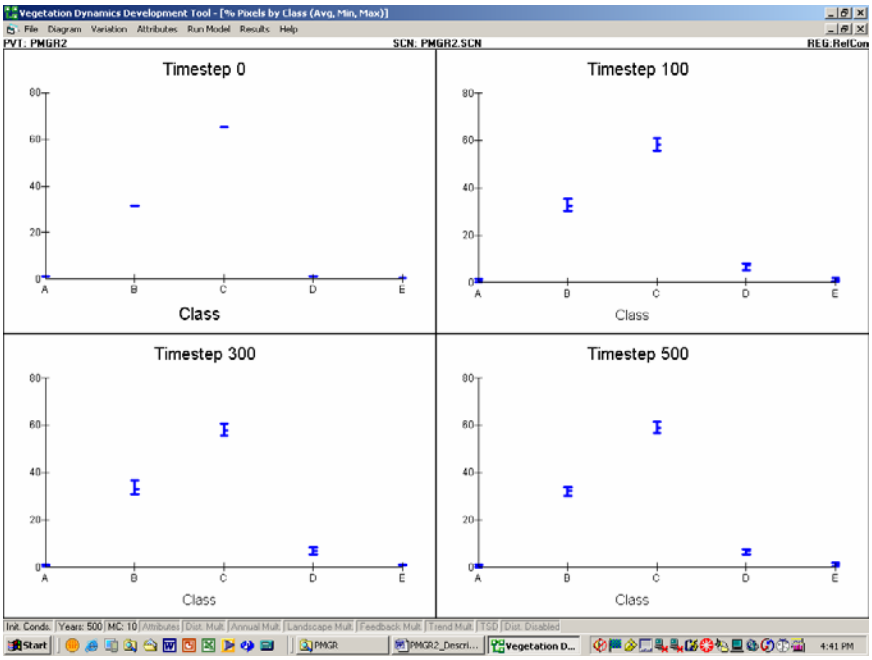
Kuchler, A. W. 1964. Manual to accompany the map of potential natural vegetation of the conterminous United States. American Geographical Society. Spec. Publ. No. 36. Lib. Congress Cat. Card Num. 64-15417. 156 p.

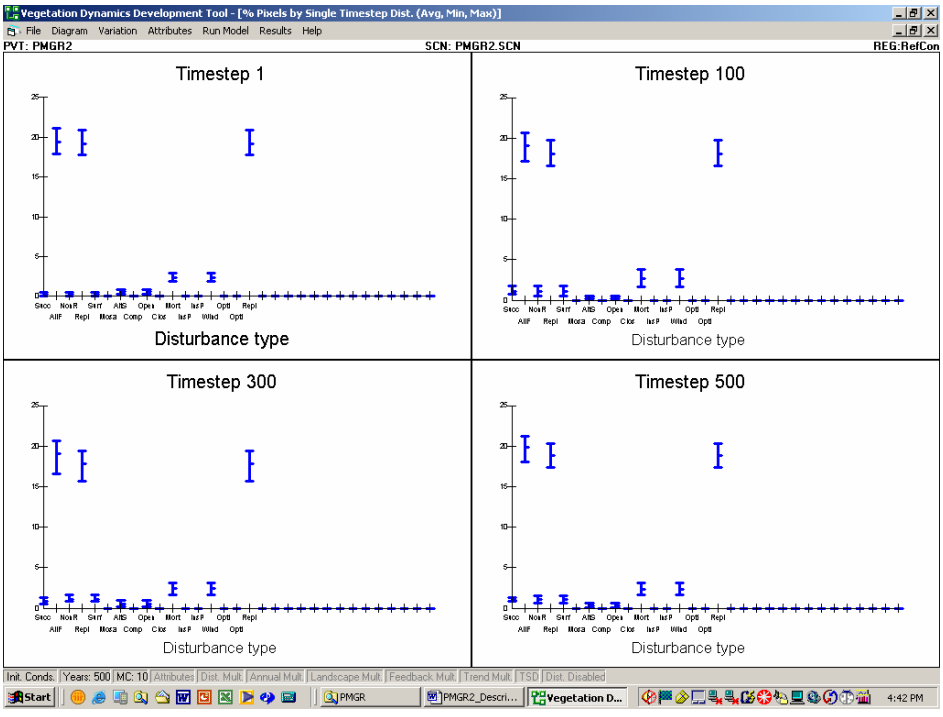
Schmidt, Kirsten M, Menakis, James P., Hardy, Colin C., Hann, Wendel J., Bunnell, David L. 2002. Development of coarse-scale spatial data for wildland fire and fuel management. Gen. Tech. Rep. RMRS-GTR-87. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.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

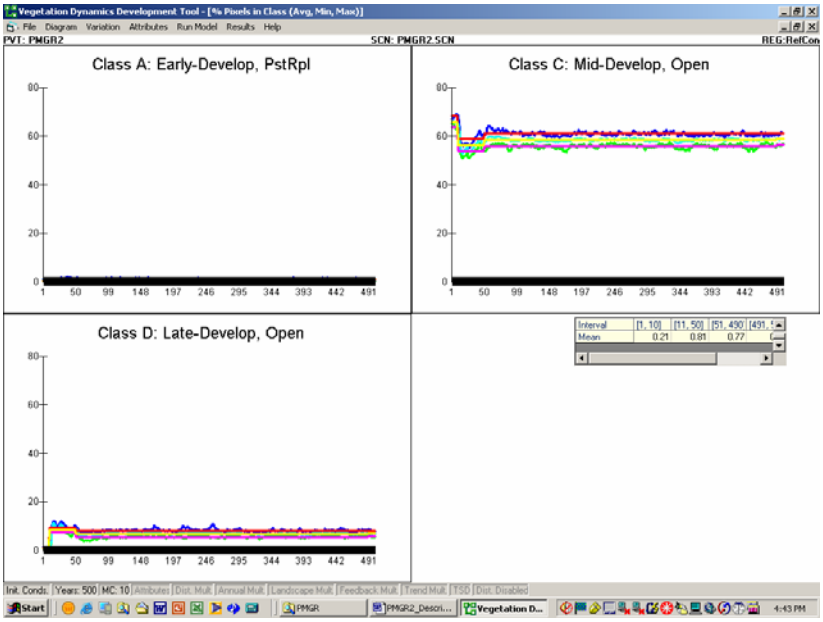
U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (2002, December). Fire Effects Information System, [Online]. Available: http://www.fs.fed.us/database/feis/.

MODELER FIELD REVIEWS:
Wendel Hann – Colorado 2003, New Mexico 2003, Texas 2001

VDDT Results:






Vegetation Dynamics Development Tool - [% Pixels in Class (Avg, Min, Max)]
File Diagram Variation Attributes Run Model Results Help
PVT: PMGR2
SCN: PMGR2.SCN
REG:RefCon
Class A: Early-Develop, PstRpl
Class C: Mid-Develop, Open
Class D: Late-Develop, Open
Interval [1, 10] [11, 50] [51, 490] [491,
Mean 0.21 0.81 0.77
Init. Conds. Years: 500 MC: 10 Attributes Dist. Mult. Annual Mult. Landscape Mult. Feedback Mult. Trend Mult. TSD Dist. Disabled
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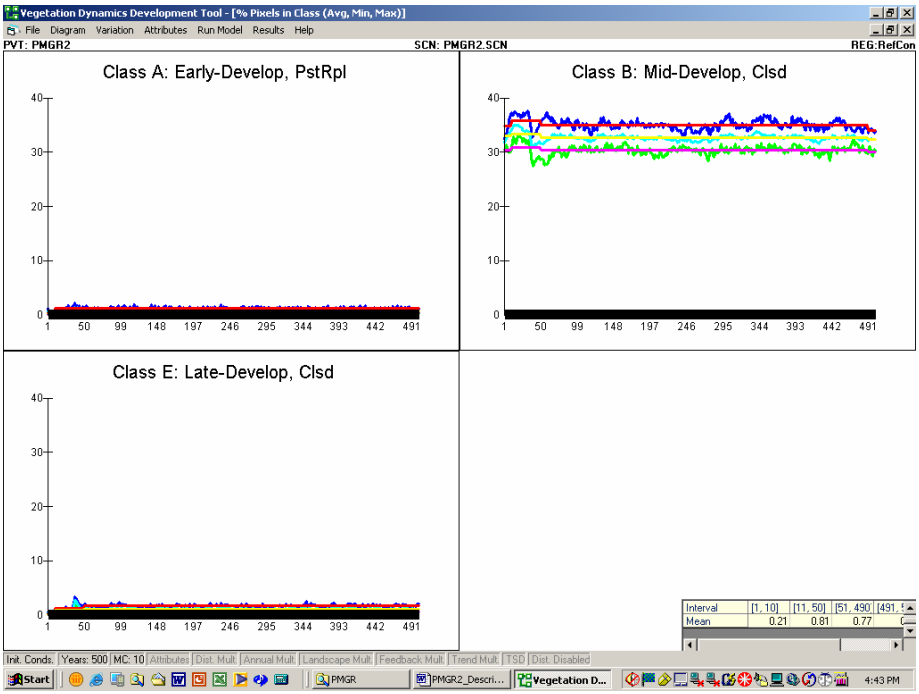
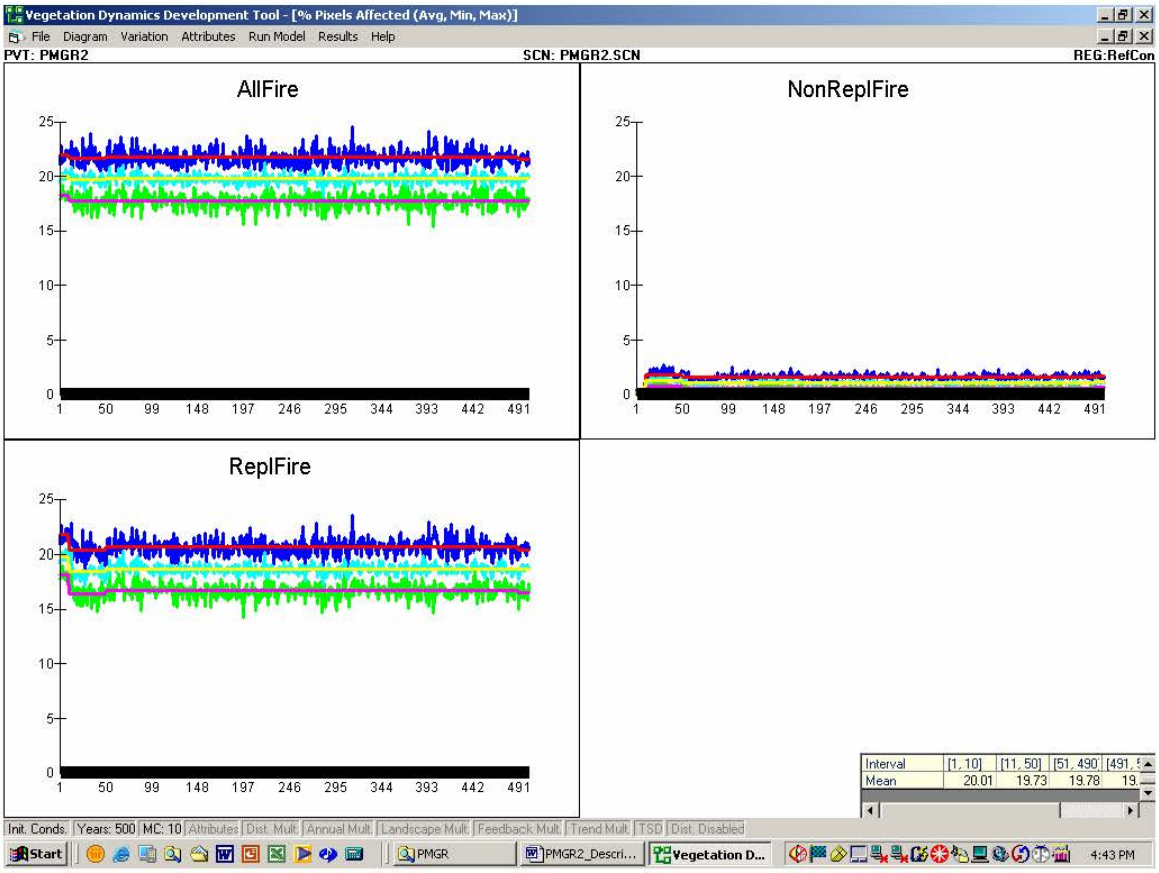
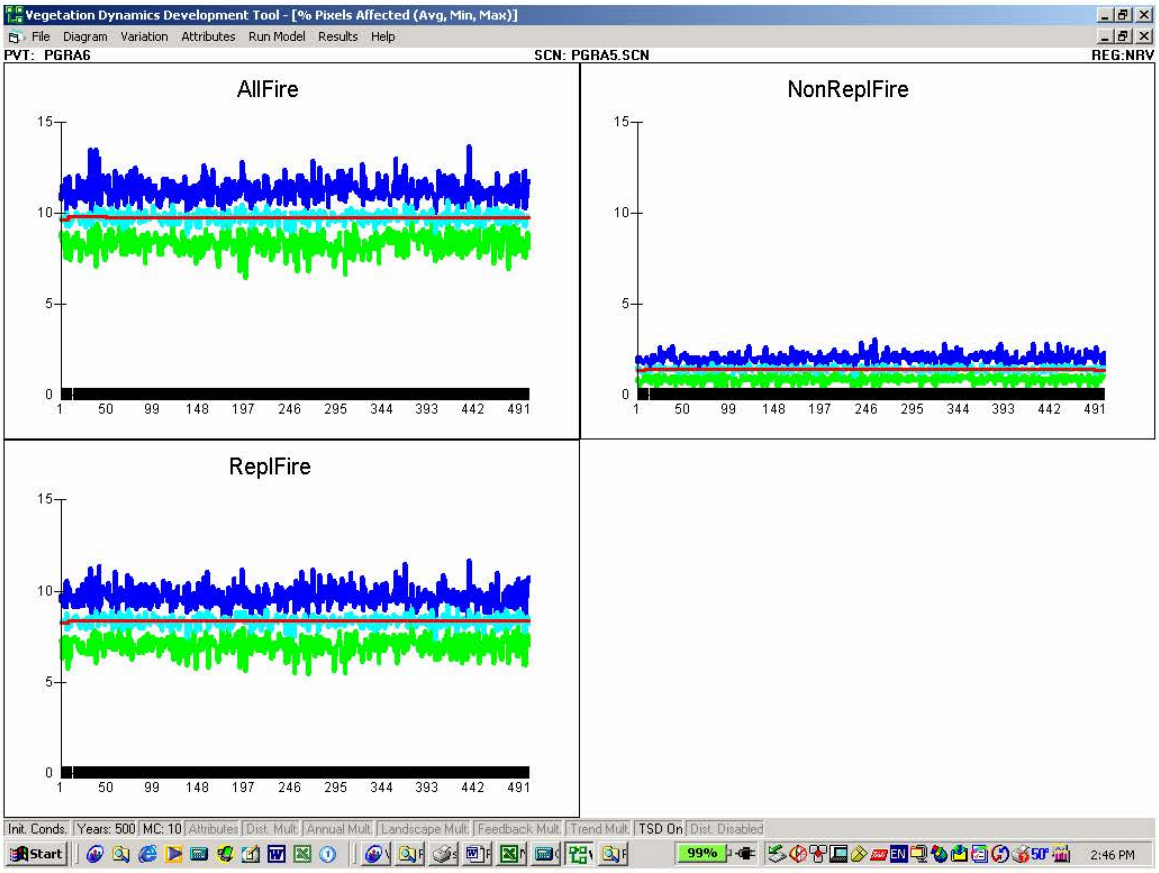

Vegetation Dynamics Development Tool - [% Pixels in Class (Avg, Min, Max)]
File Diagram Variation Attributes Run Model Results Help
PVT: PMGR2
SCN: PMGR2.SCN
REG:RefCon
Class A: Early-Develop, PstRpl
Class B: Mid-Develop, Clsd
Class E: Late-Develop, Clsd
Interval [1, 10] [11, 50] [51, 490] [491,
Mean 0.21 0.81 0.77
Init. Conds. Years: 500 MC: 10 Attributes Dist. Mult. Annual Mult. Landscape Mult. Feedback Mult. Trend Mult. TSD Dist. Disabled
Start PMGR PMGR2_Descri... Vegetation D... 4:43 PM


Vegetation Dynamics Development Tool - [% Pixels Affected (Avg, Min, Max)]
File Diagram Variation Attributes Run Model Results Help
PVT: PMGR2
SCN: PMGR2.SCN
REG:RefCon
AllFire
NonReplFire
ReplFire
25
20
15
10
5
0
1 50 99 148 197 246 295 344 393 442 491
Interval [1, 10] [11, 50] [51, 490] [491, 5
Mean 20.01 19.73 19.78 19.
Init. Conds. Years: 500 MC: 10 Attributes Dist. Mult. Annual Mult. Landscape Mult. Feedback Mult. Trend Mult. TSD Dist. Disabled
Start
PMGR
PMGR2_Descri...
Vegetation D...
4:43 PM


Vegetation Dynamics Development Tool - [% Pixels Affected (Avg, Min, Max)]
File Diagram Variation Attributes Run Model Results Help
PVT: PGRA6
SCN: PGRA5.SCN
REG:NRV
AllFire
NonReplFire
ReplFire
15
10
5
0
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
Start
99%
2:46 PM